



FRIDAY, OCTOBER 31.

## Train Accidents in September.

The following accidents are included in our record for the month of September:

## COLLISIONS.

## REAR.

On the morning of the 6th an excursion train on the Philadelphia & Reading road ran into a ballast train near Lebanon, Pa., and two cars were damaged.

Early on the morning of the 9th a passenger train on the Cincinnati, Indianapolis, St. Louis & Chicago road ran into a freight car which had been run on a siding in Indianapolis, Ind., but was projecting over on the main track. The freight car was wrecked, the engine destroyed and a fireman hurt.

On the evening of the 9th a freight train on the Pittsburgh, Cincinnati & St. Louis road ran into the rear of a passenger train which had stopped on the bridge over the Monongahela River in Pittsburgh, Pa. One car was thrown over the side of the bridge and wrecked.

On the night of the 10th a passenger train on the Geneva & Lyons road ran into the rear of a freight train near Cuddeback, N. Y., doing considerable damage. There was a dense fog at the time.

On the night of the 10th a passenger train on the Richmond & Danville Railroad ran into the rear of a freight train which had pulled into a siding at High Point, N. C., but had left the caboose projecting over upon the main track. Several of the passenger cars were badly damaged and the caboose was wrecked. The fireman and a postal clerk were injured.

On the morning of the 13th a passenger train on the Buffalo, New York & Philadelphia road ran over a misplaced switch and into a freight train standing on a siding at Turtle Point, N. Y. The engine was damaged and two cars wrecked. Three trainmen were slightly hurt.

On the morning of the 14th an extra freight train on the Philadelphia & Reading road ran into a coal train which had stopped for water at Fairfield, Pa. The engine and several cars were damaged, the engineer killed, and the fireman badly hurt.

On the morning of the 14th a freight train on the New York, New Haven & Hartford road broke in two near Mamaroneck, N. Y., and the rear section ran into the forward one wrecking two cars and damaging the tender.

On the night of the 16th a freight train on the Vandalia Line ran into two freight cars which had been blown from the siding upon the main line in Greenville, Ill., by a heavy wind storm. The engine and both the cars were badly wrecked.

On the morning of the 17th a freight train on the Texas & Pacific road ran into a preceding freight at Long View, Tex., wrecking several cars.

On the night of the 17th a freight train on the Missouri Pacific road ran into a preceding freight near Sedalia, Mo. An engine and twelve cars were wrecked and an engineer badly hurt.

On the evening of the 18th a freight train on the Philadelphia & Reading road ran into some cars which had broken loose from a preceding freight train at Zehnerville Crossing, Pa. Several cars were wrecked.

On the night of the 18th a freight train on the Boston, Housatonic & Western road ran into a preceding freight on a high embankment near Mechanicsville, N. Y. An engine and 20 cars were wrecked, a number of them being rolled down the bank.

On the evening of the 19th two flat cars loaded with rails broke loose from a freight train on the Philadelphia & Reading road near East Mahanoy Junction, Pa., and ran down the steep grade at very high speed to Tamaqua where they struck a passenger train which had just reached the station. The two cars and the engine were completely demolished.

On the morning of the 20th a freight train on the Michigan Central road ran into a preceding freight which had topped at Farnessville, Mich., wrecking several cars and injuring a fireman.

On the evening of the 21st a freight train on the Pennsylvania Railroad ran into a preceding freight near Kelly's, Pa., wrecking the caboose.

On the morning of the 22d a passenger train on the Central Pacific road ran into the rear of a freight train in the yard at Port Costa, Cal., wrecking several cars.

Early on the morning of the 23d a stock train on the St. Louis Bridge Railroad ran into a preceding stock train on the approach to the bridge at East St. Louis, Ill. Several cars were wrecked and a number of cattle killed.

On the night of the 23d a freight train on the Chicago & Alton road ran into a passenger train which had stopped near Cavaga, Ill., on account of an accident to the engine. Two sleeping cars and the locomotive were badly damaged. Two trainmen and five passengers were slightly hurt.

On the evening of the 25th a freight train on the Baltimore & O. road ran into a preceding freight which had stopped on a bridge at Glencoe, W. Va. Fourteen cars were badly wrecked, some of them being piled up on the bridge in a way which made it extremely difficult to clear the track.

On the night of the 26th a freight train on the New Haven & Northampton road broke in two near Westfield, Mass., and the rear section afterwards ran into the forward one wrecking fourteen cars. A brakeman was slightly hurt.

A few minutes after this collision took place a passenger train came along and ran into the wreck damaging more cars and injuring its own engine. The engineer and one passenger were slightly hurt. No flag was sent out from the wreck, although the passenger train was nearly due.

On the night of the 26th a freight train on the Peoria & Rock Island road ran into a preceding freight which had stalled on a heavy grade near Dunlap, Ill. The engine and several cars were wrecked, the engineer killed and the fireman and a stockman badly hurt.

Very early on the morning of the 27th a freight train on the Western Maryland road ran into a preceding freight which had stopped to switch some cars just at the entrance to the yard in Baltimore. Four cars and the engine were badly wrecked. The wreck caught fire and was destroyed. The engineer and fireman were very badly hurt. It is said that the first train sent back a signal, but the man did not go far enough.

On the morning of the 27th a freight train on the New York, Lake Erie & Western road ran into a preceding freight near Andover, N. Y. The engine was damaged and several cars wrecked. The brakeman was hurt, so that he died in a few hours.

On the night of the 29th a freight train on the Chicago, Burlington & Quincy road ran into some cars which had broken loose from a preceding freight near Naperville, Ill.

The engine was damaged and some 20 cars were piled up in a bad wreck. The fireman was slightly hurt. There was a dense fog at the time. It is said that the second train was following the first so closely that there was no time to send back a signal.

On the morning of the 30th an excursion train on the Eastern Railroad ran into a regular passenger train which had stopped at South Berwick, Me. The second train was drawn by two engines and both engines were thrown from the track and upset and the rear car of the forward train was badly wrecked. One passenger was somewhat hurt. It was said that the accident was caused by the carelessness of an agent who neglected to put out a signal for the excursion train.

## BUTTING.

On the night of the 1st there was a butting collision between two freight trains on the Atchison & Nebraska road near Table Rock, Neb. Both engines and several cars were damaged.

On the afternoon of the 9th there was a butting collision between two passenger trains on the Chicago, Milwaukee & St. Paul road near Lanark, Ill. Both engines were damaged and an engineer badly hurt. One of the trains was an extra run by a different route from the usual one on account of wash-out.

About noon on the 10th there was a butting collision between two freight trains on the New York, West Shore & Buffalo near Hindonville, N. Y. Both engines and several cars were piled up in a bad wreck. The accident was due to a mistake of the east-bound freight train, which should have gone upon the second track but did not do so.

On the morning of the 13th there was a butting collision between two passenger trains on the Chicago & Alton road near Marshall, Mo. Both engines and several cars were wrecked, one passenger was badly and five slightly hurt. It is said that the trains had received conflicting orders from the dispatcher.

On the morning of the 16th there was a butting collision between two freight trains on the Hannibal & St. Joseph road near Saxton, Mo. Both engines and several cars were damaged.

On the morning of the 16th there was a butting collision between two freight trains on the Philadelphia & Reading Railroad near Pottstown, Pa., by which both engines and 45 cars were badly damaged. The engineer of one of the trains was hurt in jumping.

On the morning of the 17th there was a butting collision between a freight train and a shifting engine on the New York, Susquehanna & Western road in Paterson, N. J. Both engines were considerably damaged. It is said that the accident was caused by the throttle-valve of the switch engine breaking so that the engineer was unable to shut off steam or to reverse his engine.

Early on the morning of the 20th there was a butting collision between a passenger and a freight train on the Atchison, Topeka & Santa Fe road, near Albuquerque, N. M. Both engines and several cars were wrecked, three trainmen hurt, a passenger killed and five passengers injured.

On the morning of the 20th there was a butting collision between two passenger trains on the Rome, Watertown & Ogdensburg road, near Richland, N. Y. Both engines were badly damaged. A passenger who was standing on the platform of one of the cars was badly hurt.

Very early on the morning of the 23d there was a butting collision between two freight trains on the Hannibal & St. Joseph road near Brush Creek, Mo. Both engines were badly wrecked and a number of cars piled up on top of them. The engineer, fireman and a brakeman of one of the trains were killed. The other engineer and fireman were slightly hurt. The accident is said to have been caused by the failure of a dispatcher to give proper orders to one of the trains.

On the afternoon of the 23d there was a butting collision between two freight trains on the Kentucky Central road near Paris, Ky. Both engines were damaged and one trainman badly hurt.

On the night of the 26th a coal train on the Baltimore & Ohio road broke in two near Baltimore, Md., and the detached cars ran back down grade and into a following coal train. The engine, caboose and several cars were badly damaged.

On the morning of the 27th there was a butting collision between two freight trains on the New York, Lake Erie & Western road near Tipton Summit, N. Y. Both engines were damaged and a brakeman badly hurt. One of the trains had orders to take a siding at Tipton, but failed to do so.

On the morning of the 29th there was a butting collision between two freight trains on the Chicago, Burlington & Quincy road near Ottawa, Ill., by which both engines were slightly damaged.

On the afternoon of the 29th there was a butting collision between a passenger and a freight train on the Baltimore & Ohio Railroad near Farmington, W. Va. Both engines were wrecked and six freight and the mail car of the passenger train badly damaged. A fireman and conductor were killed instantly, an engineer fatally hurt and two mail clerks less severely injured.

On the night of the 30th there was a butting collision between two passenger trains on the Denver & Rio Grande road near Acedia, Col. Both engines were wrecked and several cars damaged. Five passengers were seriously hurt and 25 others slightly injured.

## CROSSING.

On the morning of the 11th a passenger train on the Welland Branch of the Grand Trunk road ran into a passenger train standing on the main line at Merriton, Ont., where the branch crossed the main line. Two cars were upset and two passengers seriously hurt besides several slightly bruised.

On the evening of the 19th a freight train on the Williamstown Railroad ran into the rear car of a passenger train on the Philadelphia & Atlantic City road at the crossing of the two roads at Atco, N. J. The car was badly damaged and 11 persons slightly injured.

On the evening of the 23d a Buffalo, New York & Philadelphia freight train ran into a Delaware, Lackawanna & Western coal train at the crossing of the two roads in Buffalo, N. Y. The engine of the freight was upset and a number of cars were piled up in a bad wreck. A fireman was slightly hurt.

## DERAILMENTS.

## BROKEN RAIL.

Very early on the morning of the 17th a passenger train on the Indiana, Bloomington & Western road struck a broken rail near Farmer City, Ill., and the whole train was thrown from the track, several cars being badly damaged. Seven passengers were seriously hurt and 15 others slightly injured. Gov. Hendricks, the Democratic candidate for Vice-President, was on the train, but fortunately escaped injury.

## BROKEN FROG.

On the morning of the 1st a passenger train on the Bellaire, Zanesville & Cincinnati road was thrown from the track in Zanesville, O., by a broken frog, and a baggage car upset, and was damaged, injuring one person.

On the night of the 24th four cars of a passenger train on the Grand Trunk road were thrown from the track near Pickering, Ont., by a broken frog, and went down a bank some 25 feet. The wreck caught fire and eight cars were

destroyed. Twelve passengers were hurt seriously, besides several others slightly bruised.

## BROKEN BRIDGE.

On the morning of the 9th a freight train on the Galveston, Harrisburg & San Antonio road broke through a small bridge near Langtry, Tex., and the engine went down into the creek and was wrecked. The engineer and fireman were killed.

On the night of the 19th a freight train on the St. Louis, Keokuk & Northwestern road broke through a small bridge near St. Peters, Mo. The engine passed over, but 15 cars went down and were wrecked.

## SPREADING OF RAILS.

Early on the morning of the 23d several cars of a mixed train on the Brattleboro & Whitehall road ran off the track in West Dummerston, Vt. Three freight cars and one passenger car upset down a bank 20 feet high. One passenger was fatally hurt and 17 others less severely injured. The accident is supposed to have been caused by the spreading of the rails on a curve.

On the morning of the 30th a passenger train on the International & Great Northern road was thrown from the track near Marquez, Tex., by the spreading of the rails. Two cars went down a bank and five passengers were hurt.

## BROKEN WHEEL.

Very early on the morning of the 1st several cars of a freight train on the Alabama Great Southern road were thrown from the track near Chattanooga, Tenn., by a broken wheel.

## BROKEN AXLE.

On the night of the 1st eight cars of a freight train on the Hannibal & St. Joseph road were thrown from the track near Wheeler, Mo., by a broken axle.

On the night of the 19th five cars of a freight train on the New York, West Shore & Buffalo road were thrown from the track near Coeymans Junction, N. Y., by the breaking of an axle.

On the morning of the 22d twelve cars of a freight train on the Wabash, St. Louis & Pacific road were thrown from the track near Sand Creek, Mich., by a broken axle.

Early on the morning of the 24th several cars of a freight train on the New York, West Shore & Buffalo road were thrown from the track near West Norwood, N. J., by the breaking of an axle. A brakeman was fatally hurt.

## BROKEN COUPLING.

On the morning of the 8th, as a freight train on the Housatonic Railroad was running into the station at Pittsfield, Mass., it broke in two and the engine suddenly started forward, running through the depot off the end of the track and into the piazza of a hotel on the opposite side of the street. The engine was damaged and the piazza pretty well wrecked.

## ACCIDENTAL OBSTRUCTION.

On the morning of the 17th the engine and one car of a passenger train on the New York, Susquehanna & Western road were thrown from the track in Jersey City, N. J., by a loose plank in a road crossing, which had been tipped up far enough to catch in the pilot and throw the engine off the rails.

Very early on the morning of the 16th several cars of a freight train on the Pittsburgh, Ft. Wayne & Chicago road were thrown from the track near Upper Sandusky, O., by a brake-beam which fell on the rails.

## CATTLE.

On the morning of the 6th a passenger train on the Baltimore & Ohio road ran over a cow at Belton, W. Va., and the whole train was thrown from the track, the engine going down a bank. The fireman was killed and the engineer slightly hurt.

On the night of the 8th a passenger train on the Memphis & Charleston road ran over a cow near Corinth, Miss., and three cars were thrown from the track. A brakeman was hurt and one passenger seriously injured, besides several who received slight bruises.

On the morning of the 10th a passenger train on the St. Louis, Iron Mountain & Southern road ran over a cow near Desre, Mo., and the engine and mail car were thrown from the track. The mail car caught fire and a number of letters were destroyed or damaged before the fire could be put out.

On the morning of the 13th a freight train on the Pennsylvania Railroad ran over a pig in Pittsburgh, Pa., and the engine was thrown from the track. A fireman was badly hurt.

On the morning of the 16th a freight train on the Wabash, St. Louis & Pacific road ran over a cow near Carmi, Ill. The engine and several cars were thrown from the track. The accident took place close to a trestle and the train ran upon the trestle on the ties when it gave way, and the engine and 13 cars were thrown down into a ravine and piled up in a bad wreck. A brakeman was killed, the engineer, fireman and a tramp who was stealing a ride were badly hurt.

On the night of the 20th a freight train on the Central Pacific road ran over a cow near Bishop, Nev., and the engine and seven cars were thrown from the track. The fireman was killed and the engineer badly hurt.

## LAND-SLIDES AND WASH-OUTS.

On the night of the 4th a passenger train on the Northern Pacific road ran into a land-slide near Miles City, Mont., and the engine was thrown from the track and badly damaged.

On the night of the 24th a freight train on the Atchison, Topeka & Santa Fe road ran into a wash-out near Styles, Kan. The engine and 17 cars were piled up in a bad wreck. The wreck caught fire, and nearly all of it which was above water was destroyed.

## MISPLACED SWITCH.

Early on the morning of the 4th a passenger train on the Cincinnati, Indianapolis, St. Louis & Chicago road was thrown from the track in Indianapolis, Ind., by a misplaced switch, and the engine and two cars upset.

On the morning of the 4th the engine of a freight train on the Ashuelot Railroad was thrown from the track at West Swanzey, N. H., by a misplaced switch.

About noon on the 10th a passenger train on the Delaware, Lackawanna & Western road was thrown from the track near Elmira, N. Y., by a misplaced switch. It is said that the switch had been left open by some trackmen who had just run in a car of ties. The engine was thrown across both tracks and the baggage car was upset. Four trainmen and two passengers were hurt.

On the night of the 18th a passenger train on the Portland & Ogdensburg road was thrown from the track at Hiram, Me., by a misplaced switch, and the engine was badly damaged.

On the afternoon of the 20th a freight train on the Canadian Pacific road was thrown from the track at Russell, Ont., by a misplaced switch. The engine and five cars were wrecked, the fireman killed and the engineer badly hurt.

On the evening of the 20th the engine of a passenger train on the Chicago, Burlington & Quincy Railroad was thrown from the track at Wyamet, Ia., by a misplaced switch.

On the night of the 24th a passenger train drawn by two engines on the Chicago & Alton road was thrown from the



track in Alton, Ill., by a misplaced switch, and both engines and a mail car were damaged. The engineer and a tramp who was stealing a ride were hurt.

On the night of the 27th the engine and two cars of a passenger train on the Wisconsin Central road were thrown from the track in Menasha, Wis., by a misplaced switch.

#### OPEN DRAWS

On the night of the 9th a freight train on the Cincinnati, Indianapolis, St. Louis & Chicago road ran into the river at Kankakee, Ill., the draw-bridge having been left open. The engine went down and was considerably damaged.

On the afternoon of the 24th a freight train on the New York, West Shore & Buffalo road ran into an open draw on the bridge over Popolopen Creek near Iona Island station, N. Y. The engine, tender and six cars went down into the creek. The draw-bridge was provided with auto-

at Glasgow Junction, Ky. Eight cars were tumbled over into the ditch, a trainman killed and two others hurt.

On the morning of the 8th several cars of a freight train on the New York Central & Hudson River road were thrown from the track at Knowlesville, N. Y., blocking the road two hours.

Near midnight on the 9th several cars of a freight train on the Terre Haute & Indianapolis road were thrown from the track near Long Point, Ill., blocking the road several hours.

Early on the morning of the 15th a freight train on the Little Rock & Fort Smith road was thrown from the track near Warren, Ark., and twelve cars were piled up in a bad wreck.

On the afternoon of the 15th a construction train on the Alabama & Chattanooga Railroad was thrown from the

coupling-rod when near La Crosse, Wis., and one side of the engine was pretty well torn up.

#### CARS BURNED.

On the morning of the 2d, as a freight train on the Indianapolis & St. Louis road was near Baldwin, Ill., an oil-tank car suddenly exploded. The fire spread rapidly, and five cars loaded with freight were consumed. A young man who was in the car adjoining the oil car was burned to death in the wreck. It is supposed that the oil tank sprung a leak and the escaping oil was fired by a spark.

On the morning of the 16th a car loaded with cotton in a freight train over the Vicksburg & Meridian road caught fire when near Jackson, Miss., and was destroyed.

On the afternoon of the 29th a car of a freight train on the Memphis & Charleston road caught fire when near



HARRINGTON'S SEMAPHORE SIGNAL.

(For description see Page 782.)

matic signals and could not be opened without setting the signal and it is supposed the engineer failed to see it.

#### MALICIOUS.

On the morning of the 15th a passenger train on the Cincinnati, Wabash & Michigan road struck some ties which had been piled on the track near Newberry, Ind. The engine was thrown from the track and three train men hurt.

#### UNEXPLAINED.

Very early on the morning of the 1st several cars of a freight train on the Allegheny Valley Railroad ran off the track in Pittsburgh, Pa., running across the street into a saloon and demolishing the front of the building.

On the morning of the 1st several cars of a passenger train on the Virginia Midland road ran off the track near Lynchburg, Va., blocking the road two hours.

On the morning of the 2d several cars of a freight train on the Illinois Central road ran off the track at Arcola, Ill., and were wrecked.

Very early on the morning of the 4th several cars of a freight train on the Wabash, St. Louis & Pacific road were thrown from the track, near Peru, Ind., blocking the road some time.

On the afternoon of the 4th a freight train on the Chesapeake & Ohio road ran off the track at Ashcake, Va., and ten cars were piled up in a bad wreck, blocking the road nearly all night.

On the evening of the 7th a freight train on the Louisville & Nashville road jumped the track while backing on a siding

track near York, Ala., and the engine upset. The engineer was scalded to death.

On the afternoon of the 15th two cars of a passenger train on the Philadelphia & Reading road ran off the track at Wayne Junction, Pa., delaying trains two hours.

On the morning of the 16th a passenger car on the Ohio River road ran off the track on a trestle near Wheeling, W. Va., and was slightly damaged.

On the afternoon of the 19th a coal train on the Honesdale branch of the New York, Lake Erie & Western road was thrown from the track near Kimballs, Pa., several of the cars rolling down the bank into the Lackawaxen River.

On the night of the 22d several cars of a freight train on the Galveston, Harrisburg & San Antonio road ran off the track near Baldwin, Tex. A brakeman was killed.

On the afternoon of the 25th several cars of a freight train on the Illinois Central road were thrown from the track near Leverett, Ill., and went into the ditch. Two trainmen were hurt.

On the afternoon of the 26th a passenger train on the New York, New Haven & Hartford road was thrown from the track near Fairhaven, Conn., blocking the road some time. The train ran for some distance on the ties, and stopped close to the high bridge over the Quinnipiac River.

#### OTHER ACCIDENTS.

##### BROKEN COUPLING ROD.

On the evening of the 17th the engine of a passenger train on the Chicago, Milwaukee & St. Paul road broke a

Stevenson, Ala., and was destroyed. A brakeman was slightly hurt.

#### SUMMARY.

This is a total of 100 accidents, in which 21 persons were killed and 174 hurt. As compared with September, 1883, there was a decrease of 58 accidents, of 23 killed and of 9 injured. A fuller statement of the totals and averages will be found on another page.

The nine months of the current year to the end of September show a total of 885 accidents, 299 killed and 1,351 injured; a monthly average of 98 accidents, 31 killed and 150 injured. The month was below these averages, except in the number injured.

#### Defaulting Railroad Companies.

The *Commercial and Financial Chronicle*, in its October *Investors' Supplement* presents a valuable table showing the railroad companies now in default on payment of interest on bonds. Only railroads in the United States are included, Mexican and Canadian lines being omitted, and only the particular issues of bonds are taken on which default is made, although the mileage given includes all operated by the defaulting companies. The table includes all companies de-



faulting during the past five years, which have not resumed payment in full, and which have not been foreclosed and reorganized. The totals are summed up in a table in which comparison is made with the defaults of 1873-76. This table, with the remarks of the *Chronicle* thereon, is given below:

	Mileage.	Amount of bonds.
Total defaults, October, 1884.....	15,986	\$ 315,283,000
Entire railroad system of U. S., Jan. 1, 1884.....	121,592	3,455,040,283
Per cent. of defaults to total.....	13.14	9.12
Total defaults, 1873-1876.....		783,967,665
Entire railroad system, Jan. 1, 1876.....	74,096	2,175,000,000
Per cent. of defaults to total.....		36.04
Increase in mileage and bonds during five years preceding Jan. 1, 1884.....	39,818	1,157,249,467
Increase in mileage and bonds during five years preceding Jan. 1, 1876.....	21,232	*636,960,000

\* Estimated at \$30,000 per mile.

There is naturally an inclination to compare the present period with the disastrous years 1873-1876, and although no close analogy is possible, a rough comparison of the general results in each period may be made. Taking into consideration, then, the total mileage and bonded debt of all railroads in the country on Jan. 1, 1876, and on Jan. 1, 1884, respectively, and the miles built and bonds issued during five years preceding each of those dates, the summary above may be given of the approximate results obtained from the grand totals in each period, the comparison being quite favorable to the present time.

The whole number of companies in default now is only 42, against 197 in the former period; and in every respect the railroad defaults of 1884 are so much below those of the disastrous time which followed the crisis of 1873, that the two periods are hardly to be named as having a close similarity to each other.

In the reflections which naturally arise on this subject, the first which comes to mind is the absence of responsibility to the public, either in money or in business reputation, among the projectors and organizers of railroads. There is a lack of that personal accountability to the public which attaches to the directors and officers of a bank. In some cases the promoters of railroads stake their fortune and their reputation on the success of the enterprise in which they invite the public to invest money, and if there is a loss in such cases there is no hostile criticism to be made on the motives or character of those men. But it is quite as often the case that railroads are organized and built only to get off the securities on the public, and the projectors do this as soon as possible and get out of the enterprise themselves just before the inevitable default occurs, having sold all their own stocks and bonds at the top prices. They are held to no accountability by the public; they are sheltered behind the impersonality of a corporation; there is apparently none of that odium attaching to them which attaches to a merchant who fails half a dozen times and always fails rich.

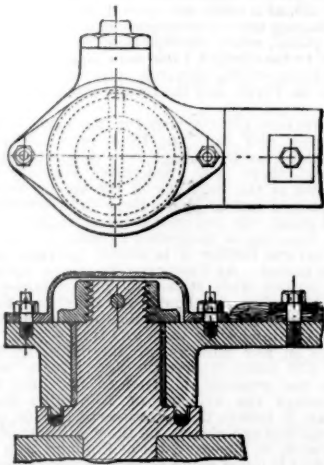
Where were the fabulous profits made out of the insolvent railroads of 1873-1876? Time and space are wanting to mention them all, but as the stocks then went to mere nominal prices and their bonds in the twenties, thirties and forties, an examination of the long list in the *Chronicle* of Jan. 22, 1876, will show at a glance a great number of railroads in which there was an immense profit between the lowest prices of 1876-1878 and the highest of 1879-1881. A good proportion of the railroads that were even decently located for business were resuscitated, and the first mortgage bondholders lost nothing if they held on to their securities.

In the former period of defaults, about 20 companies out of the total 197 that were embarrassed were old railroads that were well established and once had a paying business. In the present period, out of 42 companies named in the table, none can be fairly said to have had a well-established and paying business on the basis of their present lines and existing liabilities, unless such companies as Erie, Wabash and Reading be classed in that category.

#### Wrist-pin Dust-guard.

The accompanying illustration represents a neat little device which may be useful to some of our readers having locomotives or dummy engines running in dusty regions.

The illustration represents a dust guard as applied to the



Wrist-pin Dust-guard.

coupling-rod pins of a dummy engine for hauling street cars. The service is, of course, very trying to bearings, the dust or mud constantly present cutting any rubbing surfaces unless very effectual precautions are taken to keep out dirt. The construction of the dust-guard is so clearly shown that explanation is only needed on one point. The strip of wood shown in the drawing is bolted to the side of the coupling-rod in order to deaden the clattering noise so often experienced

when a bushed coupling-rod wears a little slack. We understand that the remedy has proved quite effectual, the noise being completely stopped.

The dummy engine in question was built by Messrs. Wilkinson of Wigan (England), and embodies several novel features. The exhaust is turned into a chamber traversed by numerous short  $\frac{1}{2}$ -in. brass tubes. The whole air supply for the fire-box passes through these tubes. Thus two objects are effected—the steam is condensed in a very simple manner, and the heat thus taken from the steam is not completely lost, as in the ordinary mode of surface condensation, where water is lost, but is returned directly to the fire, the air supply being warmed, and thus adding to the temperature of combustion.

#### Contributions.

##### Locating a Crossing with Reversed Curve Between Parallel Tracks.

PROVIDENCE, R. I., Oct. 9, 1884.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In reply to your correspondent, "Inquirer," I herewith submit a solution of his problem worked out by Searle's rule, reference being made to his diagram: Let  $s$  = space between flange sides of the two tracks, in this case 6.5, and  $g$  = gauge of tracks, in this case 5.5.

The frog number is 10.

Then radius =  $2gn^2 = 1,100$  ft.

and  $\frac{1}{2}(g + s) = 6$ .

$$\text{Log. } 6 = 0.778151$$

$$\text{Log. } 1100 = 3.041393$$

$$aCP = 5^\circ 59' 12'' \quad 7.736758 = \text{versine.}$$

$$\text{Sin. } 5^\circ 59' 12'' = 9.018272$$

$$\text{Log. } 1100' = 3.041393$$

$$1. P = 114.72 \text{ ft.} + 2.059665$$

From this subtract frog distance = 110 (calculated by Searle's rule), multiply the result = 4.72 ft. by 2, which gives the distance from theoretical point to point = 9.44' of frogs; from this deduct twice the distance from theoretical point to actual point ( $0.4165 \text{ ft.} \times 2$ ) = 0.833 ft. The result, 8.6 ft., is the distance required.

The problem can be worked out by natural numbers in this manner, viz:

From radius 1,100 ft. deduct  $\frac{1}{2}(g + s) = 6$ ; this gives 1,094 ft.; to this add radius and multiply the result, 2,194, by  $\frac{1}{2}(g + s)$  or 6, and extract the square root of the product 13,464, giving 114.73; then proceed as before.

WATERMAN STONE.

#### The Color for Safety Signals.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Mr. J. E. Ralph's communication and your comments thereon in the *Railroad Gazette* of Oct. 17 raise a very interesting question, and, as some points of importance bearing upon it seem still to lack the illumination they deserve, I venture a few observations.

On reading the article referred to I thought I disagreed with you quite materially, and so assumed that a letter would be particularly welcome, as editors always prefer opinions which do not agree with their own. I believe; but on more careful examination I conclude that in matters of fact you and Mr. Ralph agree with each other, and that I agree with both of you. If this is so, very likely the theories will be found not so very divergent as might at first appear. If anybody has proposed for universal adoption a signal which has by its very nature been the cause of accidents, as Mr. Ralph asserts concerning the white lantern on locomotives, it certainly cannot be claimed that the universal code has passed beyond the period of debate, even if it has been adopted by a large number of roads. A question settled any other way than right is not expected by anybody to stay settled, of course.

In the first place, it is certain that your comparison with marine signals is wholly pertinent? Lighthouses are few and far between, comparatively, while the greater part of railroad signals are in or near yards, where there are a number of them, and where the runner's greatest difficulty often is in distinguishing one signal from another which is near to it (and so, likely to deceive him). In such a case what would it benefit us to have a strong light to penetrate a fog? I suppose nobody expects to deprive the fog of its diffusive effect, by which two lights that are anywhere near together are practically blended into one.

But the ideal system on which train-running should be managed is, to have it just as safe for fast trains in foggy weather as in clear; and to do this where trains make long runs averaging 50, 60, or more miles per hour, nobody would think of requiring the runner to keep track of signals a great way ahead of him; and this because he would sometimes have too many different ones in mind at the same time, if for no other reason. This ideal system does, indeed, involve the expense of distant signals worked by mechanical power or electricity, but it certainly ought to be more fully adopted in many cases. There can be no doubt that there are many fast trains run in this country whose trips in clear weather may be called safe ones, but which in times of fog are positively unsafe, at the same speed. Where every dangerous or doubtful point is protected by a signal far enough away to give every train time to stop after it passes the signal, runners can have no possible excuse for not stopping soon enough, and accidents where trains are almost stopped, when they ought to be quite, will have still less justification than they do now. Most of our so-called "distant" signals are only partially so, being far enough off to stop a train only in case its speed is

within a certain limit, which limit is not always strictly adhered to.

In the matter of color, red, green and white seem to be the only available ones for signals, and nearly everybody who says anything assumes that we must have red for danger, green for caution and white for safety. But is it really so essential to have a caution signal? Why not use green for safety? So long as white lights are used in dwelling-houses and in lanterns, and in fact every where, colored signals will have marked advantages over white ones, and when a simple bull's-eye, red or green, can be easily seen at a distance of a mile, what more is wanted? Notwithstanding the strong arguments we hear in favor of red, and only red, for danger, there are those who believe in the use of shape or position instead of color for night signals, and, in order to insure the signal's being visible the longest possible distance, make use of two white lights placed horizontally for a stop signal (corresponding to the horizontal position of the semaphore arm); but I am inclined to think that by the time the runner reached a point where he could feel sure that the lights were in a horizontal line (on a foggy night) he would also be near enough to see a good red or green lens.

Caution is such an indefinite term that it may well be questioned whether its use in rules does not sometimes do harm. A caution signal certainly does not always mean the same to a fast train that it does to a slow one; the latter may be traveling slowly enough already, under circumstances where the former ought to slacken. The most important place for this kind of a signal is at distant fixed signals, to be used when the home signal is at danger; but why would it not be just as well in such cases to make the rule to "proceed only as the way is seen to be clear?" A runner would not be exercising much "caution" who should go any faster than that, and a red (or stop) signal could then be used, for, in practice, I believe nobody thinks of depending upon even a red signal to hold a train absolutely and indefinitely; a man is expected to be with or near it to tell the engineman what is required of him. That is to say, a red signal is seldom or never left without an attendant, except in cases where it is perfectly safe for an approaching train to "feel its way" along until some more intelligible source of information is reached. But, whether this is the practice or not, it could be so arranged, and the idea of caution be conveyed to runners in some way other than by color, and the result attained just as surely as it is now.

My notions are not very cogently expressed, perhaps; but what I am driving at is, that the more you arrange signals to be seen from long distances, the more you will encourage carelessness in times of fog and snowstorms; for runners are exceedingly apt to think that they must make their time, at all hazards.

N. E.

#### The Chicago Passenger Rate War.

TO THE EDITOR OF THE RAILROAD GAZETTE:

I have read your item referring to the "war over passenger rates between Chicago and the Missouri River," and, being fully acquainted with the facts in the case, beg to say that the trouble is much more serious than you apparently apprehend. While the Rock Island mileage tickets are one of the factors that caused the fight, they are not the only one. The number of mileage tickets the Rock Island road has put on the market has, really, nothing whatever to do with the question, although that number is larger than you may imagine. It is well known that the Rock Island Company gave to one advertising agent nearly \$30,000 worth of these tickets for advertising for 1884, and that it has already given this same agent about \$6,000 worth in advance, on 1885 advertising, and that it is paying numerous other advertising agents in the same lavish way. Still, in spite of all these tickets being on the market, the competitors of the Rock Island Company would not complain if it did not allow these tickets to depreciate, and thus allow them to be sold at any rate the holders can realize. It is the demoralization in the rates that causes the complaint, and the refusal of the Rock Island management to put a check to the depreciation that it can readily do, or else to fix a redemption price that of itself would stop the depreciation in the same way as the redemption (redemption) act stopped the depreciation of "greenbacks." In addition to the demoralization caused by these mileage tickets, the Rock Island road has placed in scalpers' hands large blocks issued by "foreign" roads (reading, of course, over the Rock Island road), and has caused the scalpers to sell them at from \$4.50 to \$5.50 each less than the regular tariff. It is believed that this is the first time that any railroad has been guilty of similar disreputable practice. It may be asked how the Rock Island company could get these tickets to place on the market and how it could do so without loss. The reply is easy.

It goes to the general ticket agent of, say "The Buffalo & Pennsylvania Railroad" if you will, and buys a thousand "extension" tickets reading from Chicago to Kansas City over the Rock Island road and pays therefor \$14,500, which is "tariff," or \$14.50 each. In due time the Buffalo & Pennsylvania Company reports to the Rock Island road the thousand tickets thus procured, and also in due course pays it the \$14,500 that it received for the tickets in question. The Rock Island Company has then got its money back and has tickets on hand that have not really cost it anything, and it can (as far as the tickets proper are concerned) sell them at any price it sees fit, exactly in the same way it could its own issue of tickets. It may be asked why it would go to all of this trouble when it could equally as well have sold its own issue of tickets. We reply: Because it was a



party to an agreement it has been the prime mover in forming, that obligated it not to sell its issue of tickets at less than full tariff rates, and that also obligated it to redeem, with heavy penalties attached, any of its issue of tickets that could be bought at less than tariff rates. You can readily guess how this gross violation of this agreement is looked upon by reputable railroad managers, and you can as readily guess that the competitors of the Rock Island road will hesitate not a little before again placing any reliance in the pledges that may be made by that company's representatives. After nearly numberless protests and fruitless appeals to allow rates to be restored, the competitors of the Rock Island road determined to reduce their rates in their

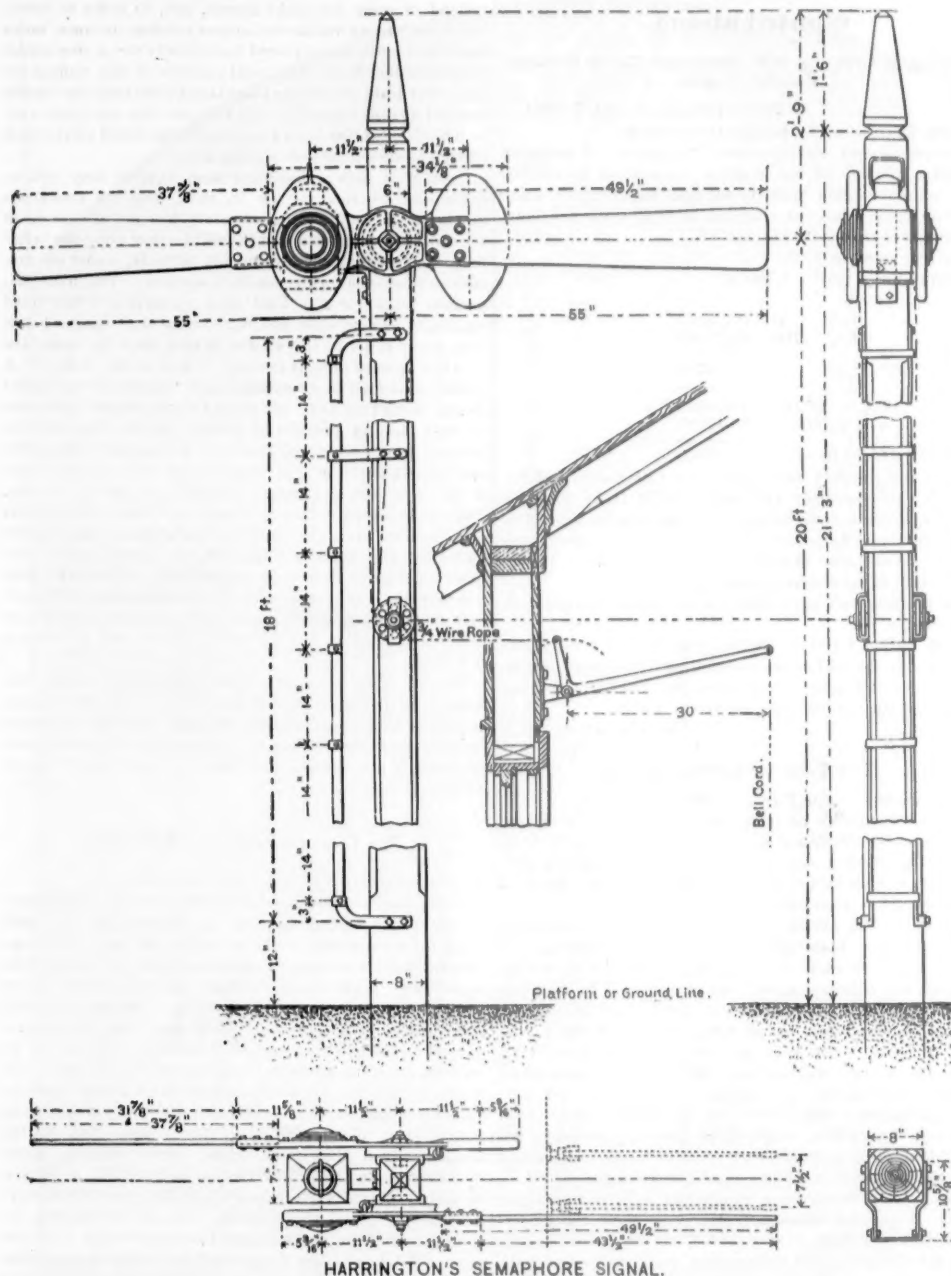
sions, and that these were divided with persons who bought Rock Island tickets from them.

The allied roads now demand the following from the Rock Island Company:

1. The redemption at tariff rates of all foreign tickets it has now on the market, or that may hereafter be placed there, and its promise not to be a party to the placing of any more such.

2. The redemption of any of its mileage tickets that may be found to be used as a means of cutting tariff rates.

3. The total cessation of paying "street" commissions in Chicago (bear in mind this has no connection whatever with paying commissions to regular ticket agents).



HARRINGTON'S SEMAPHORE SIGNAL.

own offices to equal the rates the Rock Island was making in its irregular offices, no matter how low they might go. By buying Rock Island tickets it was found that its average rate from Chicago to the Missouri River was about \$9.75, consequently that became the rate; but it was soon found that the Rock Island would not hold its irregular agents even to that low rate, and that it had again lowered its figures; hence, what may here be called the allied roads were again forced to drop their rates, and so it went on until the rate reached \$5. Then the irregular agents were driven to adopt another plan. They sold "circuitous tickets," or "short-line" tickets via the long line, and rebated to the buyer the difference in price between the real destination of the passenger and the actual destination of the ticket. For instance, to a man going to Kansas City they would sell a ticket to St. Joseph, Mo., via Kansas City, at the "short-line" rate, and would rebate to the passenger the sum of the local rate from Kansas City to St. Joseph, which is, say, \$2.50, so that in place of its costing the passenger \$5 to go from Chicago to Kansas City, it really cost him no more than \$2.50. This was as irregular and quite as much of a cut of rates as if the Kansas City rate had been cut squarely, and consequently the allied roads accepted it as such and followed it down to until the rate has touched \$1, where it now stands.

From the above it will be seen that the Rock Island has been the aggressor and has made all of the cuts, and that the allied roads have merely acted on the defensive and have simply met the cuts made by their competitor. During the progress of the depreciation it was found that the Rock Island was paying scalpers and runners "street" commis-

4. The abolition of the sale of "circuitous or short-line rate tickets" over the long line, and the redemption at full tariff rates of all such that be found on the market.

The allied roads offer to bind themselves, in any way that may be suggested, that they will strictly conform to the requirements they ask the Rock Island road to subscribe to. NEW YORK, Oct. 25, 1884.

A STOCK AND BOND HOLDER.

#### Harrington's Semaphore Signal.

The accompanying illustrations show a form of railroad signal which has been lately patented by Mr. S. H. Harrington, of Columbus, Ohio, and has been adopted as the standard on the Pittsburgh, Cincinnati & St. Louis Railway. The aim of the designer has been to produce an efficient semaphore signal at a moderate cost; and as we are informed that the whole signal complete, including lamp, can be sold for \$26.25 f. o. b., it is evident that the signal is not an expensive luxury, while we think a little examination will show that the signal can be clearly seen and easily worked and is well suited to the requirements of most roads.

The signal differs in details, though not in form, from the ordinary semaphore signal. While the signal arms present the same appearance and move in the same way, the colored disks of glass for night use are attached to and form part of the semaphore arms, instead of being detached and placed below the arms and worked by separate rods.

As will be seen from the plan in the general drawing of the signal, one arm is placed on each side of the post. The signal lantern is placed between the arms on the left-hand

side of the post and serves for both signals. Both arms work on centre-plates and pins fast on the sides of the post and both are balanced so as to remain in a horizontal position, unless they are purposely lowered or "pulled off" by the signal man. When the arm is horizontal, a snug on the neck connecting the oval balance weight to the centre piece of the semaphore arm comes in contact with a corresponding projection on the centre-piece part to the signal post. The arms cannot, therefore, rise above a horizontal position.

The balance weight in the right-hand arm is cut away in the centre, and a colored Fresnel lens inserted so that, when the arm is horizontal and the lantern lit, a red light is shown. The left-hand semaphore arm has a corresponding lens arranged to come exactly opposite the lantern, but it is, of course, placed in the small part of the arm, and not in the balance weight.

In the above description the terms right and left refer to the signals as shown in the geometrical views. In the perspective view these terms are reversed, the left or ladder side of the signal post in the geometrical drawings becoming the right hand side on the perspective view. This, of course, merely depends on the point of the view; as seen by the engineer of the advancing train, the ladder is on the left-hand side of the post.

This signal is manufactured by the Barney & Smith Manufacturing Co., of Dayton, Ohio, from whom any further information may be obtained.

#### The Forth Bridge.

(Continued from page 766).

##### WIND PRESSURE.

The maximum wind pressure upon the 1,700 ft. span had been assumed to be equivalent to a pressure of 56 lbs. per square foot upon the double surface. Mr. Fowler and I have spared no pains during the past two years to contribute something to the general fund of information; and other engineers, doubtless, are experimenting—for experiments, and not speculations, are wanted. We have had now for two years, on the island in the middle of the Forth near the centre pier of the bridge, three wind gauges, or pressure boards; the large one, 300 square feet in area, is fixed square to the east and west winds, and of the two small ones of 1 1/4 square feet area, one is fixed as above, and the other is free to swivel square to the wind in any direction. I ventured to prophesy that, contrary to the opinion of many, the large board would show a smaller average pressure per square foot than the small ones. I have summarized the readings of the gauges for the past two years, and find them to fairly bear out my anticipations. In preparing the following table, the mean of all the readings of the revolving gauge between 0 lbs. and 5 lbs., 5 lbs. and 10 lbs., etc., have been taken, and the mean of the corresponding readings at the same time of the small fixed gauge and of the large fixed gauge for easterly and westerly winds have been set forth opposite.

Revolving gauge.		Small fixed gauge.		Large fixed gauge.	
Mean pressure.		Easterly.	Westerly.	Easterly.	Westerly.
Lb.	Lb.	Lb.	Lb.	Lb.	Lb.
0 to 5	3.00	3.47	2.92	2.94	1.9
5 " 10	7.58	4.8	7.7	3.54	4.75
10 " 15	12.4	6.27	13.2	4.55	8.28
15 " 20	17.06	7.4	17.9	5.5	12.66
20 " 25	21.0	12.25	22.75	8.0	19
25 " 30	27.0	.....	28.5	.....	18.25
30 " 35	32.5	.....	38.5	.....	21.5
Above 35	.....	.....	41.0	.....	35.25
(One observation only above 32.5.)					

I do not place implicit faith in the registrations of anemometers, although we test the working of the gauges in the most careful manner; but it is pretty well established by our two years' experiments that the effective pressure per square foot on a large and comparatively heavy board averages only about two-thirds of that indicated by an ordinary light anemometer. It will also be noticed that the heaviest gales have been from the west, and that the revolving gauge then indicated much the same as the fixed gauge. Some critics were of opinion that our 300-ft. gauge would be of little use, as it could not swivel square to the wind, but remembering the experiments made with a fan blast on oblique plates, which showed that the resultant pressure was normal to the surface, I felt sure that having reference to the prevailing winds, swiveling was of no practical importance at the Forth, and the results justified my anticipations.

The two heaviest gales occurred in the early morning of Dec. 12, 1883, and Jan. 26, 1884, respectively. On the latter occasion much damage was done throughout the country, and there was conclusive evidence from the extent as well as the intensity of the storm, that it was a very exceptional one in character. At Inch Garvie the small fixed gauge was reported to us as registering 65 lbs. per square foot, but on inspection I found the index pointer could not traverse further or it might, perhaps, have indicated much higher. At Valencia very strong squalls covering short periods were stated to have attained a rate of upward of 150 miles per hour. At Holyhead lengthened squalls of 120 miles and short squalls of higher rates were reported. At Alnwick we were told that several instances of 10 miles in five minutes, or 120 miles an hour, and squalls of 150 miles occurred. Now, if we assume, as is common, the pressure of wind to be equal to 0.005 V<sup>2</sup>, and accept the velocity of 150 miles as correct, we shall have to believe that pressures of 112 lbs. per square foot were reached at Valencia, on the west coast of Ireland, and at Alnwick, on the east coast of England, Jan. 26 last. I confess I find it much easier to believe that the records of anemometers as at present obtained are utterly misleading and valueless for all practical purposes. I entirely mistrusted our own 65-lbs. record, and experimented with the gauge, and made it register 65 lbs. by the sudden application of a pressure not exceeding 20 lbs. The momentum of the light index needle, and not that of the pressure plate, which was brided back, sufficed to cause the error.

The record of 65 lbs., therefore, is valueless so far as regards the specific maximum pressure attained during the great storm, but of considerable value as evidence that the highest pressure, whatever it might have been, partook of the character of a smart jerk of too instantaneous duration to affect a structure of any size or weight. From the records generally, and from my own watching of the movements of



the three gauges, I have come to the conclusion that uniform velocity and pressure in a wind, whether it may prevail or not at cloud heights, can never obtain near the surface of the earth or in the neighborhood of any bridge or other structure capable of causing eddies. Unsteady motion must be the rule in air as in water, and the threads of the currents moving at the highest velocity will strike an obstruction successively rather than simultaneously, so that the mean pressure per square foot on a large area must be less than that on a small surface from that cause alone, irrespective of possible differences in the partial vacuum at the back of the planes.

In the spring of this year, when running into Dublin harbor during a heavy broadside gale, I took occasion, when in still water but in the full blast of the wind, to measure the heel of the vessel, and from her elements to calculate subsequently the mean pressure required. My pressure board in this case was about 6,000 square feet in area, and the deduced mean pressure was 12 lbs. per square foot. From other data I estimated the corresponding anemometer pressure at fully double the preceding amount, and this was perfectly rational, because the vessel kept steady at the constant heel, while heavy local gusts of very small area struck different parts of her in a distinctly recognizable manner. In short, the large area and heavy mass of the hull equalized the jerky action of the numerous small blasts of high intensity, and a similar action doubtless takes effect in ordinary railway structures, and will to a still greater

In the case of the tubes we have the tube itself, then a couple of box lattice cross braces, with channel bar members, and finally another tube. No theory exists which could enable us to estimate even approximately the equivalent flat surface of such a network; and I feel until my scheme of experiment by models was realized with satisfactory results that our calculation of stresses from wind pressure rested on anything but a logical basis. The problem to be solved was how far the eddies caused by the front surface affected the surfaces to the rear. In the recommendation of the "Wind Committee" a front plate girder was considered to give complete shelter to any girders to the rear of it, but I think any one who has walked "Indian file" in a gale of wind will have noticed that unless he looked up pretty closely to the front man he felt practically the full force of the gale, and similarly unless the rear plate girders of a bridge be relatively close to the front girder the latter will not afford anything like complete shelter. It is obvious, therefore, that the depth of the girders and the distance apart enter into the problem, as well as the question of their being plate or lattice; and I may add further that the position and character of the floor between the girders also materially affect the wind stresses.

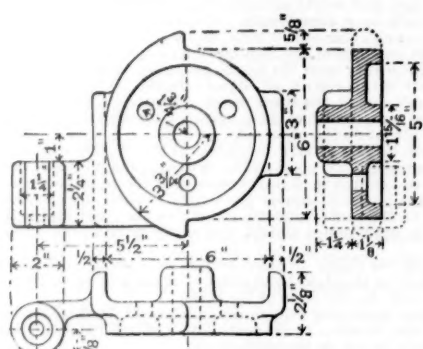
My original idea was to prepare models and test them in actual wind at Inch Garvie, but the irregularity of the results, even with the flat boards, precluded the possibility of any useful data being so obtained. I determined, therefore, to abandon the attempt to measure actual resistances, but to

bearing on railway bridges where a succession of lattice bars may occur one behind the other, which would offer a very large surface to the wind if the proper way of estimating that surface were to take a slightly angular view of the bridge and measure up all that was visible.

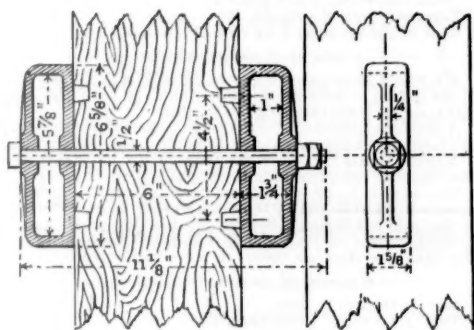
I found that two plates connected by a floor plate at the bottom offered no more than 90 per cent. of the resistance of the single plate. Summarizing my conclusions, the effective surface of a plate girder bridge would range from 90 per cent. to 180 per cent. of that of the front surface according to the distance apart of the girders, the degree of openness of the floor, and its position relative to the main girders.

In many respects the preceding remarks apply to lattice girders, but the varying extent of the open space between the bars introduces an additional complication. When the openings were one-fourth of the whole area, I found for a distance of one diameter apart, an increased resistance of 8 per cent. from the second disk, while with openings of double the size, the increase was 30 per cent. At two diameters the respective amounts were 40 per cent. and 66 per cent., while at four diameters the more open lattice reached 94 per cent. In other experiments, sometimes with a small flat plate in front of a lattice, and sometimes in the rear, I obtained at four diameters distance resistance exactly equal to the sum of the two specimens tested separately.

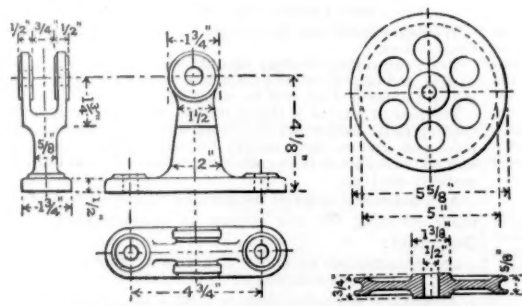
The top member of the Forth Bridge consists, as I have



Semaphore Arm Centre Bearing and Stop.

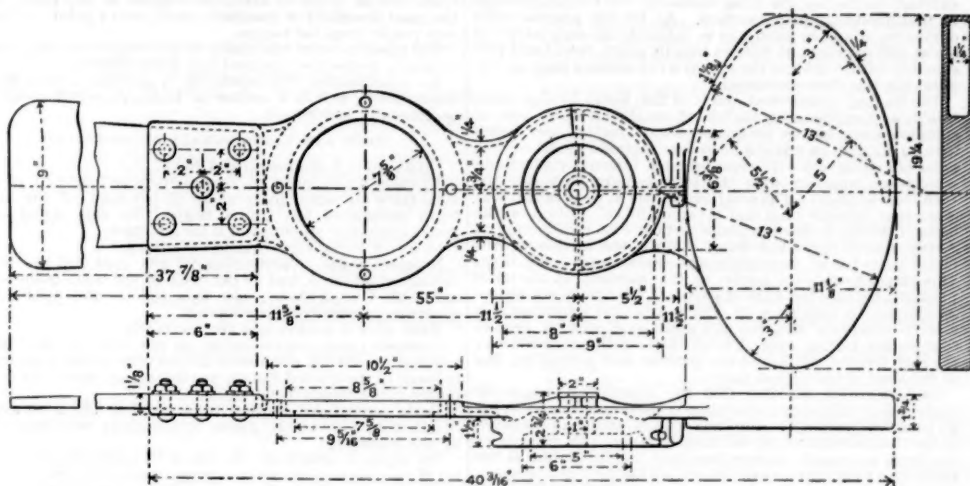


Spindle and Shield for Pulleys.

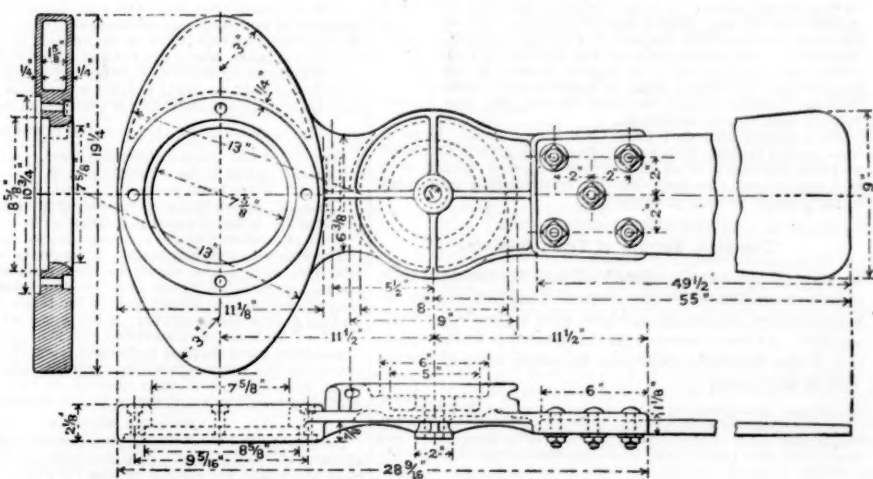


Bracket for Bell-crank Lever.

Wire Rope Pulley.



Left-hand Semaphore Arm.



Right-hand Semaphore Arm.

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extent in such a large and heavy structure as the Forth Bridge.

Mr. Fowler and I are of opinion, therefore, as a result of our two year's further consideration, that the assumed pressure of 56 lbs. per square foot over the whole of the bridge is considerably in excess of anything likely to be realized. It is another question whether the method of estimating the effective area exposed by the bridge; namely, double the plane surface with a deduction of 50 per cent. in the case of tubes, is right or wrong. We think it is a sufficiently near approximation of the truth, for reasons which I will briefly set forth.

As all engineers well know, one of the results of the panic caused by the fall of the Tay Bridge was the appointment by the Board of Trade of a Committee to consider the question of wind pressure on railway structures, which Committee advised the adoption of certain rules. Shortly stated, these were: 1. That a maximum wind pressure of 56 lbs. per square foot should be provided for. 2. That the effective surface upon which the wind takes effect should be assumed at from once to twice the front surface according to the extent of the openings in the lattice girders. 3. That a factor of safety of four for the ironwork, and of two for the whole bridge overturning as a mass when gravity alone comes in, should be adopted. In the case of the Forth Bridge we took the highest ratio for the surface, namely, twice; but I had not at the time the slightest idea whether the twice ought not to be thrice and even more. Under these circumstances the necessity of further experiments was clearly indicated, and we have made them.

The tension members and the bracing of the Forth Bridge, as already explained, are lattice box girders and the main compression members are tubes. Thus, in the case of the top tension members near the piers, we have the front surface of the girder with channel bars and projecting flanges, making it essentially different to the flat anemometer plate, and three corresponding surfaces, situated respectively about 7 ft., 33 ft., and 40 ft. to the rear of the front surface,

arrive at the same end by getting the equivalent area in flat surface of the different bridge members and cross-bracing, and for this purpose devised a very simple pendulum arrangement, consisting in effect of a cross-bar with a model at one end and an adjustable flat surface at the other of exactly equal weight, which bar was suspended at the centre, so that the only resistance to turning was the torsion of the suspending string. On oscillating this pendulum, if the flat surface were not the exact equivalent in resistance of the model, one or the other would advance, and the sensitiveness was such that different observer would rarely vary more than 3 or 4 per cent. in their results.

To test the sufficiency of this simple apparatus I contrasted the resistances of thin flat surfaces and cubes, and my results agreed within 2 or 3 per cent. of those obtained in the most elaborate manner by Dubaut many years ago. Similarly, the results obtained with cylindrical surfaces and inclined planes were in strict accord with those obtained by previous observers and other apparatus. When experimenting with sheltered surfaces, however, my results differed considerably from previous experimental ones, which I must say are singularly few in number, having reference to the vast importance of the subject to engineers. Thus, according to Thibault, the resistance of the rear plate of a pair set at a distance apart equal to the diameter is 0.7 of that of the front plate, whilst in my experiments I found no such excess until the distance apart was  $3\frac{1}{2}$  diameters. I experimented with disks placed at from 1 diameter to 4 diameters apart, and the resistance of the two disks in terms of that of the single one was in round numbers 1.0 for 1 diameter; 1.25 for  $1\frac{1}{2}$  diameters; 1.4 for 2 diameters; 1.6 for 3 diameters; and 1.8 for 4 diameters. An increased number of disks placed intermediately between the front and rear disks little affected the resistance. For example, by reducing the 4 diameters to 3.6 diameters, an extra disk could be introduced without increasing the resistance of 1.8, and by still further reducing the distance to 3.5 diameters, 4 disks could be employed. The result is of great importance in its

said, of a pair of box lattice girders, or as may be said equally truly, of four single-web lattice girders. Models of these single-web girders, tested in pairs, gave 20 per cent. increase from the rear girder when the distance apart was equal to the depth; 50 per cent. for two depths; 70 per cent. for three depths, and 80 per cent. for four depths. When three girders were placed one behind the other, the middle girder gave rise to a further increase of about 4 per cent. for three depths and for four depths; in short it mattered practically little whether two, three or four girders were used. Two models of a complete bay of the top member were made, one as light as possible and the other somewhat heavy. The results were in accord, the resistance averaging 1.75 times that of the plane surface, whilst that of each of the lattice box girders tested separately was 1.15. As a factor of 2 instead of 1.75 was used in the wind calculations, the pressure on the lattice members has been somewhat over-estimated, but on the other hand that on some of the other members of the bridge, judging from the results of the experiments, has been somewhat under-rated.

The bottom member, and the main struts of the bridge, consist of a pair of tubes braced together by box-lattice girders. I tested a complete bay of the bottom member, and found the resistance of the two tubes, placed seven diameters apart, together with the two box lattice braces, of a depth equal to the diameter of the tubes, to be 1.1 times that of the plane surface. Substituting plate girders for the lattice braces, the ratio was still only 1.24, so the tube evidently acted as a sort of cut-water, and by clearing a path for the flat surfaces lessened their resistance. This was further proved by removing one of the tubes and testing the single tube and cross lattice bracing. Tube in front the resistance was but 80 per cent. of that obtained when the lattice was to the fore. The lattice bracing tested alone had a resistance equal to 60 per cent., whilst when in position between the two tubes, it only increased the resistance about 5 per cent. This, perhaps, was to me



the most reassuring of all the experiments, because, looking at a complete model of the bridge, it appeared as if the intricate mass of cross-bracing must offer an enormous resistance to the wind. As a matter of fact, so far as my experiments extend, it would seem that the eddies caused by the front surface extend to a great distance in all directions, and in a complex structure the innumerable and conflicting eddies would almost appear to neutralize each other as regards some of the sheltered surfaces. On the other hand, in simple isolated structures, such as a pair of bars or tubes, the shelter is practically nil at distances equal to about six diameters, and the members might as well be abreast. This was well demonstrated in the experiments by arranging the models on the skew so as to imitate the effect of a wind blowing at an angle to the horizon, when constant results were obtained with widely different angles.

In the approach viaduct at the Forth the lattice girders are under the rails, and there is a wind fence on each side. Testing a model of this class of construction, I found that the resistance of the parapet and of the railway carriages was only two-thirds of the corresponding plane surface, a result due no doubt to the eddies thrown up by the girders. It would appear, therefore, that current estimates of the wind pressure required to overturn railway carriages on exposed viaducts should be further considered, for although an average carriage might overturn with a uniform pressure of 40 lbs. per square foot, a 60-lb. wind may be necessary to produce the equivalent of that pressure. In our model of a pair of lattice girders with floor, wind fence and railway carriage on the top, the total resistance was but 93 per cent. of that due to the plane surface. As by the present rules engineers would in such a case estimate the equivalent at about 150 per cent., it follows that in many recent and presumably future bridges the actual wind stresses may be considerably less than estimated.

The leading constituent parts of the Forth Bridge were tested, as described, by models of single members and of complete bays, but we proceeded a step further and tested both in air and in water a complete metallic model of two pairs of cantilevers with cross bracing, internal viaduct and wind fence, together with the intermediate part over the Inch Garvie piers. The total resistance so ascertained was 9 per cent. greater than that obtained by calculation on the basis of taking double the plane surface with a deduction of 50 per cent. in respect of tubes. With the models of different parts tested separately the excess was 4 per cent. This excess would not apply to the moment of the wind pressure, because the highest parts of the bridge are lattice structures, the resistance of which was over-estimated. If a 50-lb. wind ever occurred as a mean over such an area as that we are dealing with, it would be something greater at the high level of the lattice top member and something less at the level of the bottom tubes.

I am, therefore, satisfied that the assumption originally made was a sufficiently close approximation to the truth for all practical purposes. I do not attach undue importance to the results obtained by the models, nor to the records of our large and small pressure boards at the Forth, but at the same time to me they have thrown a little daylight on many obscure questions respecting the actual wind pressure on railway bridges and other structures. Mr. Stewart and I would sometimes attempt to calculate the resistance of a model upon hypotheses of our own, and differ most widely in our results, as others who have attempted the same thing have generally done. A single swing of the long pendulum would solve all our doubts and difficulties. In arranging the experiments, I had regard to Froude's principles as to velocity relative to the scale of the models, and believe the eddies and interferences to be similar in kind in the models and bridge. Of course, what is wanted is the measured resistance of actual bridges in actual storms, but this I have not yet been able to undertake.

Such experiments as I have been able to make have at least served to show how little is known about wind stresses, and how necessary it is that every engineer should seize such opportunities as may offer for contributing something to the general store of information.

### The New System of Train Signals.

In view of the approaching adoption of the system of train signals recommended by the General Time Convention, we reprint below the report in which that system was recommended. At the meeting of the Convention in Philadelphia, Oct. 9, the Secretary gave the following summary of the vote on the report:

	Miles.
Roads that have agreed to adopt the proposed system with the fall change of time-tables.....	24,909
Roads that will conform to the system at a later date.....	954
Roads that have agreed to adopt the greater portion of the system.....	4,662
Roads that will adopt the proposed system, provided it is adopted by connecting roads.....	26,898
Total.....	57,423

A number of roads not included in this report were represented in the Convention, and may be considered as agreeing to its adoption.

The report, which was first presented to the General Time Convention Oct. 11, 1883, was prepared by a committee consisting of Messrs. James McCrea, A. A. Talmage, George W. Parker and E. B. Thomas, and is as follows:

Your committee, to whom was referred at the last session of your Convention the subject of the adoption of uniform signals respectfully submit the following report:

In the consideration of the question your committee arrived at the conclusion that there were certain fundamental principles governing the formation and use of signals which should never be lost sight of, viz.:

First. Hand and lamp signals should be as nearly as possible like the motions a person uninstructed would give to convey the same meaning.

Second. All signals should be so plain as to make it impossible to misunderstand or confuse them.

Third. As far as possible no signal should be made to convey more than one meaning.

Fourth. Signals should be exhibited in the location which will make them the most plainly visible, and for the longest time to those for whose information they are displayed.

In ascertaining the relation which the above principles bear to common practice your committee decided that the time and labor that would be required to prepare statistics showing the practice of all the roads in the United States would be so great as to render it impracticable; and, therefore, taking into consideration the train mileage and equipment, 25 roads were selected (except for whistle signals) representing nearly 50 per cent. of the total train mileage of the United States; 33 per cent. of the equipment, and 25 per cent. of the track mileage; and in making our recommendations we have endeavored to reconcile them with the practice, as shown by these statistics, and our own view of what is consistent with the principles we have assumed to be correct.

#### HAND AND LAMP SIGNALS.

To avoid confusion the day or hand signals should be made

so that it is possible to give the same motion at night, with a lamp in the hand.

There are four communications or signals necessary to be made in this manner, viz.: *Go ahead; Stop; Back up and Train parted.*

The motions made to convey these ideas should be as near like those made by a person uninstructed to produce the same movement as is possible. Persons giving signals are more frequently behind the engine than elsewhere, and the motions should be formed for that position.

An examination of one dozen or more persons with no railroad experience (assuming them to be placed behind the engine) resulted, in a majority of cases, in motions resembling the following:

*Go ahead*—An up and down motion.

*Stop*—A motion crosswise with the track.

*Back up*—A motion in a circle.

The *go ahead* signal was given by raising the hand above the head and moving it energetically forward in the direction it was desired to move the train until the arm took a horizontal position, when the hand was again raised and the motion repeated. Looked at from in front, the hand had the appearance of moving up and down.

The *back up* signal was made by standing facing the engine, extending the arm toward the engine and moving in the arc of a circle over the head, at the same time slightly twisting the body until the hand pointed almost in the direction the train was to move. The arm was then dropped and returned to its first position. The plane of the circle thus made was an angle of about 45 degrees to the track, and the hand described a complete circle, every point of which was visible from the engine.

The signal to stop was made by moving one or both arms violently across the supposed line of movement.

No examination was made for a movement to indicate train parted, as it is a matter of technique which could not be generally understood.

#### HAND AND LAMP SIGNALS RECOMMENDED.

*Go ahead*.—A motion up and down.

Thirteen roads out of 25, representing 49 per cent. of the total train mileage considered, or 25 per cent. of the total train mileage of the United States, use this signal, and your Committee recommend it for adoption.

*Stop*.—A motion crosswise of the track.

Nineteen roads, representing 80 per cent. of the train mileage considered, and 40 per cent. of the total train mileage of the United States, use this signal, and your Committee recommends it for adoption.

*Back up*.—A motion in a vertical circle.

Fourteen roads, representing 49 per cent. of the train mileage considered, and nearly 25 per cent. of the total train mileage of the United States, use this signal, and your Committee recommends its adoption.

*Train parted*.—A motion in a vertical circle at arm's length across the track, given continuously until answered by the engineer.

The signal is practically in use on 14 railroads, representing 60 per cent. of the train mileage considered, and 34 per cent. of the total train mileage of the United States, although on many of them the words "continuously until answered by the engineer" are not included in the rules.

#### BELL-CORD SIGNALS.

Having considered the hand and lamp signals, which are methods of transmitting information from the train crew to the engineer, we will continue the subject by considering the bell-cord signals, which are for the same object.

In transmitting these signals correctly it is very desirable that they should be made as brief and simple as possible, and thereby reduce the liability for errors to a minimum.

#### BELL CORD SIGNALS RECOMMENDED.

- One (1), (when train is standing) start.
- Two (2), (when train is running) stop.
- Two (2), (when train is standing) call in flagman.
- Three (3), (when train is running) stop at next station.
- Three (3), (when train is standing) back.
- Four (4), (when train is running) reduce speed.

The above signals are mainly in accordance with common practice, except the signal to stop immediately; twelve roads, representing 54 per cent. of the train mileage considered, and nearly 26 per cent. of the train mileage of the United States, using one tap of the gong when running instead of two, as recommended by the committee. Your Committee have decided to deviate from the practice indicated, for the reason that the signal is also the result of a train parting, and if then obeyed by the engineer would probably result in a collision with the detached portion.

#### WHISTLE SIGNALS.

In considering these signals the committee have been enabled to use much more extensive statistics than in the other class of signals, by reason of the very full table published with the September edition of the *Official Railway Guide* for the year 1881.

#### WHISTLE SIGNALS RECOMMENDED.

Signal.	Use.
—	Signal for approaching Stations, Railroad Crossings and Junctions.
o	Apply brakes; stop.
oo	Off brakes; start.
(S) o o o	Answer to any signal, except train parted.
(K) o o o	Train parted.
—	Back up.
—	Calling attention to signals carried.
—	Calling in flagman.
oooo	Engineer's call for signals from switchmen, watchmen and trainmen.
— o o o	Road crossing.
o o o o o	Send flagman out.
Succession of 2's	Stock alarm.

Explanation of signals: o short sound; — long sound; (S) standing; (R) running.

For "off brakes" the Committee have deviated from the custom most generally in use (two short blasts), believing that two long blasts is better for a signal to start, and that two short blasts should be used by the engineer to answer conductors, flagmen and others giving him signals.

The committee have also deviated from the general custom in recommending four long blasts of the whistle to call in flagman. According to statistics, 46 roads, covering 51 per cent. of the train mileage considered, and 36 per cent. of the total mileage of the United States, use four short blasts. We not only think that four long blasts answer the purpose better, but that it is the common practice, notwithstanding the general rules on the subject to the contrary. Besides this, 12 roads, representing 29 per cent. of the train mileage considered, and 23 per cent. of the total mileage of the United States, use the four long blasts.

On many roads it may not be considered advisable to adopt any signal to send flagman out, but when thought necessary the Committee recommended the use of five short blasts, when from some sudden emergency the engineer considers

it necessary to notify the flagman that the rear of the train must immediately be protected.

#### STATIONARY AND FIXED SIGNALS.

All signals of color, shape or position not held in the hand but placed stationary by the side of track, or fixed on a moving train are included under this heading.

The principal use of such signals is to indicate either danger, stop—red; caution, proceed with care—green; safety, track clear—white, or if scheduled to do so, stop for traffic—white and green.

The effort of the Committee has been directed to make red a signal of danger only, and to be used for no other purpose than to bring trains to a full stop.

The fixed signals on trains have other meanings, which will be considered hereafter.

Each of the four first mentioned should be indicated by a signal of shape or color entirely distinct from all the others, and as colors are not readily distinguishable at a distance, they should always, when practicable, be re-enforced by shape or position. As to shapes, a man standing by the track desiring to stop a train, would naturally extend his arm across the track. The outlines would then be a perpendicular object with a horizontal arm protruding at right angles near its top. If he desired to give a signal he would drop his hands, and his outlines would be perpendicular. The signals of safety and danger should conform to these outlines as nearly as possible, combined with red and white at night.

The sign that would naturally suggest itself as one of caution would be a compromise between danger and safety, or a perpendicular object with an arm extending out and down at an angle of 45°, combined with green at night.

In conformity with the fourth principle mentioned in the first part of this report, all signals should be placed on the engineer's side of the track, as he approaches them, unless the land contours make them more easily seen by the engineer if placed on the other side.

Switch targets should be placed on the engineer's side as he runs toward the point of the switch, as there is more danger when running in that direction than through the switch.

In case separate signals for trains in each direction are placed on the same standard, the arm on the right side as the signal is approached should ordinarily govern the movement.

Signals for trains in one direction only should ordinarily project from the right hand side of the upright as you stand facing it in the direction of the traffic.

Danger signals for rear protection should be displayed in an elevated position to the rear only, and never shown when the target is not on the main track.

The fixed signals on trains are used to indicate:

Train following with the same rights as the train carrying the signals.

Train following, which is irregular or extra.

Train carrying the signals, itself irregular.

Rear of the train, and for rear protection.

#### FIXED SIGNALS RECOMMENDED.

We would recommend a green signal carried on the front of the engine to indicate a train following with the same rights as the train carrying the signals.

A combined green and white signal carried on the front of an engine to indicate a train following which is irregular. A white signal carried on the front of an engine to indicate that the train carrying the signal is itself irregular.

The rear of every train (passenger or freight) should be plainly marked to enable those interested to know that all of the train has passed. We recommend that green markers be used for this purpose, and they should be combined with the signals, so that one lamp can serve both purposes.

#### TORPEDO SIGNALS RECOMMENDED.

One (1) Danger! Stop!

Two (2) Caution! Run carefully!

The signal for danger should consist of fewer detonations than the one for caution, so that if one cap fails to explode in a caution battery, the signal becomes one of danger.

#### CONCERNING THE USE OF SIGNALS.

We recommend that the danger signal be used to indicate train orders.

Trains on sidings to clear should remove their signals of danger and display those of caution, otherwise trains passing on the main track will be stopped.

The rear of a train is the part that, when the train is proceeding in its authorized direction, will pass over a given point last, and markers should be displayed on that part, and no train should be reported or considered by until the markers are seen.

As a matter of interest we give the following list of the roads adopting the new system as recommended by the Committee:

#### ROADS AGREEING TO ADOPT THE NEW SYSTEM WITH THE FALL CHANGE OF TIME-TABLES.

Alexandria & Fredericksburg. (See *Pennsylvania R. R.*)  
Alexandria & Washington. (See *Pennsylvania R. R.*)  
Allegheny Valley, David McCargo, General Superintendent.

Anniston & Atlantic, H. L. Roberts, Superintendent.  
Arkansas Midland, H. B. Johnson, Superintendent.  
Arkansas Valley Lines, Henry Wood, General Manager.  
Ashland Coal & Iron, Douglas Putnam, Jr., Superintendent.

Atlanta & West Point. (See *Western Railway of Alabama*.)

Baltimore & Potomac. (See *Pennsylvania R. R.*)

Bell's Gap, Robert G. Ford, Superintendent.

Brooklyn, Flatbush & Coney Island, J. L. Morrow, Superintendent.

Buffalo, New York & Philadelphia, Geo. S. Gatchell, Superintendent.

Burlington & Missouri River, G. W. Holdredge, Assistant General Manager.

Camden & Atlantic. (See *Pennsylvania R. R.*)

Cape Fear & Yadkin Valley, J. S. Morrison, Engineer and Superintendent.

Central Iowa, E. L. Dudley, Superintendent.

Chattahoochee, F. H. Oliphant, General Manager.

Chesapeake & Ohio, C. W. Smith, General Manager.

Chicago & Alton, C. H. Chappell, General Manager.

Chicago, St. Louis & Pittsburgh. (See *P. C. & St. L.*)

Cincinnati & Green River, George B. Harper, Superintendent.

Cincinnati, Van Wert & Michigan, Everett Garrison, General Manager.

Cleveland, Columbus, Cincinnati & Indianapolis and Indianapolis & St. Louis, E. B. Thomas, General Manager.

Cleveland, Delphos & St. Louis, I. H. Burgoon, General Manager.

Cleveland, Lorain & Wheeling, Oscar Townsend, General Manager.

Concord Railroad and branches, H. E. Chamberlain, Superintendent.

Connetquot Valley, Samuel Briggs, General Manager.

Coudersport & Port Allegany, B. A. McClure, General Superintendent.



Cumberland & Maurice River, L. H. Dowdney, Superintendent.  
 Cumberland Valley, J. F. Boyd, Superintendent.  
 Denver, Utah & Pacific, L. M. Fouts, Superintendent.  
 East Broad Top, A. W. Sims, Superintendent.  
 East St. Louis & Carondelet, Jos. Hill, General Superintendent.  
 Eastern Kentucky, H. W. Bates, General Manager.  
 Florida Southern, Sherman Conant, General Manager.  
 George's Creek & Cumberland, James A. Millholland, General Manager.  
 Georgetown & Lanes, A. J. Twigg, President.  
 Gettysburg & Harrisburg, Wm. H. Woodward, Superintendent.  
 Grand Rapids & Indiana, W. O. Hughart, President.  
 Gulf, Colorado & Santa Fe, W. Snyder, General Manager.  
 Gulf, Western Texas & Pacific, M. D. Monserrate, President.  
 Houston & Texas Central, A. H. Swanson, General Transportation Manager.  
 Huntington & Broad Top Mountain, Geo. F. Gage, General Manager.  
 Illinois & St. Louis, C. H. Sharman, General Superintendent.  
 Indiana & Illinois Southern, W. C. Lyon, General Manager.  
 Indiana, Illinois & Iowa, T. P. Shonts, General Superintendent.  
 Indianapolis & St. Louis. (See C., C. & I. Ry.)  
 Indianapolis & Vincennes. (See P., C. & St. L.)  
 Jefferson, Madison & Indianapolis. (See P., C. & St. L.)  
 Kansas City, Fort Scott & Gulf and Kansas City, Springfield & Memphis, Geo. H. Nettleton, General Manager.  
 Kentucky & South Atlantic, Geo. B. Harper, Superintendent.  
 Kentucky Central, C. W. Smith, General Manager.  
 Knoxville & Augusta, R. N. Hood, President.  
 Lackawanna & Pittsburgh, R. M. Patterson, General Superintendent.  
 Lebanon Springs, W. C. Van Alstyne, Manager.  
 Louisville & Nashville, J. T. Harahan, General Manager.  
 Meadville & Linesville, J. B. Peters, General Superintendent.  
 Memphis & Little Rock, Rudolph Fink, General Manager.  
 Minneapolis, Lyndale & Minnetonka, W. McCrory, President.  
 Mont Alto, Geo. B. Wiestling, Engineer and Superintendent.  
 Morgan's Louisiana & Texas, J. Kruttschnitt, Superintendent.  
 Natchez, Jackson & Columbus, E. D. Frost, General Superintendent.  
 Nevada Central, F. W. Dunn, General Superintendent.  
 New Haven & Northampton, S. B. Opdyke, Jr., Superintendent.  
 New York, Chicago & St. Louis, Lewis Williams, General Manager.  
 New York, Philadelphia & Norfolk, James McConkey, Superintendent.  
 New York, Pittsburgh & Chicago, G. W. Dixon, Superintendent.  
 Norfolk & Western, Joseph H. Sands, General Superintendent.  
 Norfolk Southern, M. K. King, General Manager.  
 Northeastern, of South Carolina, John F. Divine, General Superintendent.  
 Northern Central. (See Pennsylvania R. R.)  
 Ohio Central, T. M. Peeler, Superintendent.  
 Ohio River, Chas. Howard, General Superintendent.  
 Oregon Railway & Navigation Co., C. H. Prescott, Manager.  
 Painesville & Youngstown, Ralph K. Paige, Receiver and Manager.  
 Paw Paw and Toledo & South Haven, J. Ibling, Superintendent.  
 Peachbottom, Benj. B. Newton, Superintendent.  
 Pennsylvania Railroad, Chas. E. Fugh, General Manager.  
 Pennsylvania Company, William A. Baldwin, Manager.  
 Petersburg, R. M. Sully, General Superintendent.  
 Philadelphia, Wilmington & Baltimore. (See Pennsylvania R. R.)  
 Pittsburgh, Chartiers & Youghiogheny, Geo. S. Griscom, Vice-President and General Manager.  
 Pittsburgh, Cincinnati & St. Louis, James McCrea, Manager.  
 Pontiac, Oxford & Port Austin, James Houston, General Superintendent.  
 Potomac, Fredericksburg & Piedmont, W. M. Grafton, Superintendent.  
 Richmond & Petersburg, J. R. Kenly, Superintendent.  
 Richmond, Fredericksburg & Potomac, E. T. D. Myers, General Superintendent.  
 Rio Grande & Pecos, James Witherspoon, Superintendent.  
 Rogersville & Jefferson, Chas. M. Leuty, Superintendent.  
 Rome, Watertown & Ogdensburg, H. M. Britton, General Manager.  
 St. Helen, Houghton Lake & Western, Z. C. Jessop, General Manager.  
 St. Louis & Cairo, C. Hamilton, General Superintendent.  
 St. Louis, Alton & Terre Haute, Geo. W. Parker, Vice-President and General Manager.  
 Seaboard & Roanoke, E. G. Ghio, Superintendent Transportation.  
 Shell Beach, M. R. Spellman, General Superintendent.  
 Shenandoah Valley, Joseph H. Sands, General Superintendent.  
 Shenango & Allegheny, J. T. Blair, General Manager.  
 Sodus Bay & Southern. (See Northern Central.)  
 Tennessee Coal & Iron, A. M. Shook, General Manager.  
 Tioga, Raymond Du Puy, Superintendent and Engineer.  
 Toledo, Ann Arbor & North Michigan, H. W. Ashley, Superintendent.  
 Tuckerton, J. J. Pharo, Superintendent.  
 Utah Central, George G. Bywater, Master Mechanic.  
 Vandalia Line, Jos. Hill, General Superintendent.  
 Warren & Farnsworth Valley, A. D. Wood, General Manager.  
 Washington, Ohio & Western, S. M. Brophy, Superintendent.  
 Waynesburg & Washington, C. E. Bower, Superintendent.  
 Western Maryland, J. M. Hood, General Manager.  
 Western Railway of Alabama and Atlanta & West Point, Cecil Gabbett, General Manager.  
 West Jersey. (See Pennsylvania R. R.)  
 Williamsport & North Branch, Benj. G. Welch, General Manager.  
 Wilmington & Northern, A. G. McCausland, Superintendent.  
 Wilmington & Weldon and Wilmington, Columbia & Augusta, John F. Divine, General Superintendent.  
 Youghiogheny, John F. Wolf, Superintendent.

ROADS WHICH WILL ADOPT THE SYSTEM AT A LATER DATE.  
 Ohio & Mississippi, W. W. Peabody, President and General Manager.  
 Rochester & Pittsburgh, J. T. Gardner, General Superintendent.  
 Texas Western, Henry Hatch, General Superintendent.

## ROADS AGREEING TO ADOPT THE MAIN FEATURES OF THE NEW SYSTEM.

Beech Creek, Clearfield & Southwestern, A. G. Palmer, Superintendent.  
 Boston, Revere Beach & Lynn, C. S. Hammond, Superintendent.  
 Brunswick & Western, H. S. Morse, General Manager.  
 Burlington Cedar Rapids & Northern (will adopt entire system if connecting roads do likewise), C. J. Ives, President and General Manager.  
 Chicago & Eastern Illinois, O. S. Lyford, General Superintendent.  
 Charleston & Savannah. (See Savannah, Florida & Western.)  
 Connecticut River, J. Mulligan, Superintendent.  
 East Tennessee, Virginia & Georgia, Henry Fink, Vice-President and Gen. Manager.  
 Minneapolis & St. Louis, T. E. Clarke, Superintendent.  
 New York, Ontario & Western, James E. Childs, General Superintendent.  
 New York, West Shore & Buffalo (with slight modification of Hand and Lamp Signals), J. D. Layng, General Manager.  
 Savannah, Florida & Western (except Stationary, Fixed and Torpedo Signals), H. S. Haines, General Manager.  
 Syracuse, Ontario & New York. (See New York, West Shore & Buffalo.)  
 Walkill Valley, Geo. H. Graves, Superintendent.

## ROADS THAT HAVE AGREED TO ADOPT THE NEW SYSTEM PROVIDED IT IS ADOPTED BY CONNECTING ROADS.

Addison & Northern Pennsylvania, Frank M. Baker, General Superintendent.  
 Adirondack, C. E. Durkee, Superintendent.  
 Atlantic & Pacific, F. W. Smith, General Superintendent.  
 Austin & Northwestern, A. L. Rhomborg, Superintendent.  
 Bangor & Piscataquis, Arthur Brown, Superintendent.  
 Bangor & Portland, C. Miller, President and Manager.  
 Bennington & Rutland, F. C. White, Superintendent.  
 Boston, Hoosac Tunnel & Western, H. L. Morrill, General Manager.  
 Bradford, Bordell & Kinzua and Bradford, Eldred & Cuba, B. C. Williams, General Manager.  
 Catsaugua & Fogelsville, C. W. Chapman, Superintendent and Engineer.  
 Cheshire, R. Stewart, General Manager.  
 Chicago & Iowa, W. H. Holcomb, General Superintendent.  
 Chicago & West Michigan, J. B. Mulliken, General Manager.  
 Chicago, Fairchild & Eau Claire, G. A. Foster, Secretary.  
 Chicago, Iowa & Dakota, John Porter, General Manager.  
 Chicago, Rock Island & Pacific, A. Kimball, Vice-President and General Superintendent.  
 Cincinnati, Washington & Baltimore, J. H. Stewart, General Manager.  
 Cleveland & Marietta, M. D. Woodford, General Manager.  
 Des Moines & Fort Dodge, C. N. Gilmore, Superintendent.  
 Detroit, Lansing & Northern, J. B. Mulliken, General Manager.  
 Detroit, Mackinac & Marquette, D. McCool, General Superintendent.  
 Eureka Springs, Powell Clayton, Vice-President and General Manager.  
 Fall Brook Coal Co.'s Railroads, A. H. Gorton, General Superintendent.  
 Flint & Pere Marquette, Sanford Keeler, Superintendent.  
 Fonda, Johnstown & Gloversville, Lawton Caten, Superintendent.  
 Fort Wayne, Cincinnati & Louisville, W. W. Worthington, General Superintendent.  
 Fort Worth & Denver City, C. L. Frost, General Superintendent.  
 Freehold & New York, Justus E. Ralph, Superintendent.  
 Fulton County Narrow-Gauge, A. C. Atherton, Superintendent.  
 Green Bay, Winona & St. Paul, Timothy Case, General Superintendent.  
 Hannibal & St. Joseph, J. F. Barnard, General Manager.  
 Illinois Central, E. T. Jeffery, General Superintendent.  
 Indiana, Bloomington & Western, C. E. Henderson, General Manager.  
 Intercolonial, D. Pottinger, Chief Superintendent.  
 Jacksonville Southeastern, E. S. Greenleaf, Superintendent.  
 Kansas City, St. Joseph & Council Bluffs, J. F. Barnard, General Manager.  
 Knox & Lincoln, C. A. Coombs, Superintendent.  
 Lake Erie & Western, D. S. Hill, General Superintendent.  
 Lake Shore & Michigan Southern, P. P. Wright, General Superintendent.  
 Louisville, Evansville & St. Louis, C. A. Darlton, Superintendent.  
 Louisville, New Albany & Chicago, Theo. L. Dunn, General Superintendent.  
 Louisville, New Albany & Corydon, St. John Boyle, President.  
 Manitoba & Northwestern (except Bell-cord and Torpedo Signals), W. R. Baker, General Superintendent.  
 Marquette, Houghton & Ontonagon, Samuel Schoch, General Manager.  
 McComb, Deshler & Toledo, W. F. Stark, Superintendent.  
 Michigan Central (except Stationary and Fixed Signals), E. C. Brown, General Superintendent.  
 Milwaukee & Northern and Wisconsin & Michigan, C. F. Dutton, General Superintendent.  
 Mobile & Ohio, G. Jordan, General Manager.  
 Naugatuck, G. W. Beach, Superintendent.  
 Newburg, Dutchess & Connecticut, C. L. Kimball, Superintendent.  
 Newport & Wickford, Theodore Warren, Superintendent.  
 New York & Greenwood Lake, Stephen Smith, Superintendent.  
 New York, Pennsylvania & Ohio, J. M. Ferris, General Superintendent.  
 Northeastern of Georgia, H. R. Bernard, Superintendent.  
 Northern Pacific, T. F. Oakes, Vice-President and General Manager.  
 Ohio Southern, C. E. Henderson, General Manager.  
 Pensacola & Atlantic, W. D. Chipley, Vice-President and General Superintendent.  
 Peoria & Pekin Union, T. B. Burnett, General Superintendent.  
 Peoria, Decatur & Evansville, Geo. L. Bradbury, General Manager.  
 Philadelphia & Atlantic City, F. S. Urie, Superintendent.  
 Pittsburgh & Lake Erie, Pittsburgh, McKeesport & Youghiogheny, W. C. Quincy, General Manager.  
 Providence & Worcester, W. E. Chamberlain, Superintendent.  
 Providence, Warren & Bristol, Waterman Stone, Superintendent.  
 Richmond & Alleghany, Decatur Axtell, Receiver and Manager.

Rock Island & Peoria, H. B. Sudlow, Assistant Superintendent.  
 Rumford Falls & Buckfield, L. L. Lincoln, Superintendent.  
 Saginaw Valley & St. Louis, N. W. Merrill, Superintendent.  
 Shepaug, E. McNeill, Superintendent.  
 Sioux City & Pacific, P. E. Hall, General Manager.  
 Somerset, W. M. Ayer, Superintendent.  
 South Florida, B. R. Swoope, Superintendent.  
 Southern Central, James G. Knapp, General Superintendent.  
 Southern Pacific (Northern Division), A. C. Bassett, General Superintendent.  
 St. Joe & Desloge, T. T. Onderdonk, Superintendent.  
 St. Joseph & Des Moines, J. F. Barnard, Vice-President and General Manager.  
 St. Lawrence & Ottawa, William Cassils, Receiver.  
 St. Louis Coal Railroad, E. C. Dawes, General Manager.  
 St. Louis, Fort Scott & Wichita, J. W. Miller, Vice-President.  
 St. Louis, Hannibal & Keokuk, E. C. Case, Receiver.  
 St. Louis, Salem & Little Rock, E. B. Sankey, Superintendent.  
 St. Martin's & Upham, A. E. Killam, Manager.  
 St. Paul, Minneapolis & Manitoba, E. B. Wakeman, Assistant General Superintendent.  
 Toledo, Cincinnati & St. Louis (Dayton and Southeastern divisions), C. E. Henderson, General Manager for Purchasers.  
 Ulster & Delaware, J. H. Jones, General Superintendent.  
 Valley, J. E. Turk, General Superintendent.  
 Virginia & Truckee, H. M. Yerrington, General Superintendent.  
 Wabash, St. Louis & Pacific, K. H. Wade, Superintendent Transportation.  
 Western Counties, J. Brignell, General Superintendent.  
 Wheeling & Lake Erie, M. D. Woodford, Receiver.  
 White Water, W. W. Worthington, General Superintendent.  
 Wisconsin Central, F. N. Finney, General Manager.  
 Woodstock, J. G. Porter, Superintendent.

The statement, perhaps, would be incomplete without a list of the roads which voted entirely against the adoption of the report; they were as follows:

Boston & Albany, W. H. Barnes, General Superintendent.  
 Boston & Maine, James T. Furber, General Superintendent.  
 Central & Southwestern Railroads of Georgia, William Rogers, General Superintendent.  
 Chesapeake, Ohio & Southwestern, John Echols, Vice-President.  
 Cincinnati, New Orleans & Texas Pacific, R. Carroll, General Superintendent.  
 Columbus & Western, E. A. Flewellen, General Manager.  
 Columbus, Hocking Valley & Toledo, G. R. Carr, General Superintendent.  
 Delaware & Hudson Canal, H. G. Young, Assistant General Manager.  
 Fitchburg, John Adams, General Superintendent.  
 Jacksonville, St. Augustine & Halifax River, W. L. Crawford, General Manager.  
 Lehigh Valley, H. Stanley Goodwin, General Superintendent.  
 Long Island, I. D. Barton, General Superintendent.  
 Milwaukee, Lake Shore & Western, H. G. H. Reed, General Superintendent.  
 Missouri Pacific, H. M. Hoxie, Third Vice-President.  
 Mobile & Girard, W. L. Clark, Superintendent.  
 New York & New England, W. H. Turner, General Superintendent.  
 New York City & Northern, F. S. Gannon, General Superintendent.  
 New York, Lake Erie & Western, B. Thomas, General Superintendent.  
 New York, New Haven & Hartford, S. C. Davidson, Division Superintendent.  
 New York, Susquehanna & Western, C. D. McKelvey, Superintendent.  
 Old Colony, J. R. Kendrick, General Manager.  
 Pacific Coast, J. M. Fillmore, Manager.  
 Perkiomen, D. B. Clark, Superintendent.  
 Philadelphia & Reading, J. E. Wootten, General Manager.  
 Savannah, Griffin & North Alabama, William Rogers, General Superintendent.  
 Scioto Valley, George Skinner, Superintendent.  
 State Line & Sullivan, I. O. Bight, Superintendent.  
 Utica & Black River, E. A. Van Horne, General Superintendent.  
 Western & Atlantic, R. A. Anderson, Superintendent.  
 Worcester, Nashua & Rochester, C. S. Turner, President and General Manager.

These companies operate 15,035 miles of road, against 57,423 miles worked by companies which have adopted the system either entirely or conditionally.

## Creeping of Rails.

The Engineers' Club held the first meeting of the season last evening at Washington University. President Woodward in the chair. Mr. J. D. Sanders was elected a member of the club. The paper for the evening was read by Mr. J. B. Johnson, his subject being the "Creeping of Rails on the St. Louis Bridge." Mr. Johnson said that on the St. Louis bridge proper the rails had been known to creep 260 ft. in one year, and on the bridge approach 400 ft. This creeping varied with the amount of traffic or with the weight carried over the rails. On the St. Louis Bridge the rails crept in the direction with traffic. These rails were supported from their base. The reason given by Mr. Johnson for the creeping was that the rail, being held fast on the extended ties, is caused to measure its length across the bridge on its extended flange whenever a heavy weight passing over it causes a wave in the rail. This wave has been known to raise the rail between the two trucks of a car  $\frac{1}{2}$  in., and the creeping has been measured and at times has amounted to  $\frac{1}{2}$  in. to  $\frac{3}{4}$  in. If the rail is supported at a place above its neutral axis, the creeping will be opposite in direction to the traffic. This Mr. Johnson demonstrated satisfactorily with a circular track of hickory. There must be some intermediate point, Mr. Johnson argued, at which the rail would have no desire to creep. The hour being late, discussion of the subject was postponed to the next meeting of the club.—*St. Louis Globe-Democrat*, Oct. 23.

## Rapid Progress in a Tunnel.

The progress in the west heading of Allegheny Mountain Tunnel, South Pennsylvania road, for week ending Friday noon, Oct. 17, was 74 ft. Size of heading, 9 ft. by 23 ft. Power, compressed air; pressure, 65 lbs.; machinery, 6 Ingersoll drills; best single cut, 9 ft. Material, hard black slate in beds of 12 to 30 in., which was easily bored and blasted. The roof was a smooth surface, rising 20 in. per 100 ft., with grade which is  $2\frac{1}{4}$  in. per 100 ft. Force, 12 men with machines, and 18 laborers loading broken material into cars. Contractor is Charles McFadden; Chas. E. Webster, Resident Engineer.





Published Every Friday.

## EDITORIAL ANNOUNCEMENTS.

**Passes.**—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

**Contributions.**—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

**Advertisements.**—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

## NEW YORK GRAIN RECEIPTS IN SEPTEMBER.

The grain and flour receipts at New York during September were much larger than in any other month of this year, but less than in the corresponding month of last year. The increase over August was equivalent to 3,783,000 bushels (35 per cent.), and of the increase the railroads brought 1,498,000 bushels and the canal 2,159,000, indicating that the railroads did not divert more traffic of this kind than usual from the canal. But even this exaggerates the effect of the competition of the railroads, because more than a third of their deliveries was flour, which the canal does not carry at all, and while the receipts of unground grain by water increased 2,250,000 bushels (48 per cent.) from August to September, those by the railroad increased but 1,109,000 bushels (28½ per cent.). Compared with last year, when the total receipts were greater, the result is very unfavorable to the railroads, they having brought 1,678,000 more bushels (of grain alone) than in September of last year, while the canal brought but 532,000 bushels less. But as the flour receipts, which the railroads have to themselves, decreased largely compared with last year, the railroads carried a smaller proportion of the total of flour and grain, having 51.5 per cent. of the whole this year, against 53.3 last year in September.

Of grain alone the receipts by rail and by water (a trifle is brought by coasting vessels) in September for nine years have been:

Year.	By rail.	By water.	Total.	P. c. by rail.
1884.....	6,958,006	6,950,438	13,908,534	41.7
1883.....	6,636,707	7,482,600	14,314,231	46.3
1882.....	6,577,417	6,330,415	12,907,832	64.5
1881.....	7,696,715	5,361,243	13,057,958	58.9
1880.....	3,992,410	10,902,356	14,894,946	26.8
1879.....	5,887,144	10,396,003	15,983,147	36.8
1878.....	6,041,056	9,990,501	16,031,557	37.7
1877.....	3,678,857	7,409,025	11,087,882	33.2
1876.....	3,135,900	3,471,659	6,607,559	47.5

The railroads hardly had an important proportion of the grain traffic until 1876, but the amount was small that year after harvest, because the crop was light, the canal movement in September having been extremely light. In 1877, after a good harvest, the railroads carried a much smaller proportion of the whole, but a larger amount. After 1877 the receipts by rail became positively large, and remained so for five of the six years until this year, the exception being 1880. This year the rail receipts are 25 per cent. less than last year and smaller than in any other since 1877, except 1880. The receipts by water were but 7 per cent. less than last year, and were 91 per cent. more than in 1882, but less than in any year from 1877 to 1880, and 36 per cent. less than in 1880. The proportion arriving by rail was smaller this year than in any other since 1880, but larger than in any earlier year except 1876. The total receipts were, with the exception of 1882, the smallest since 1877.

As to the competition of the several railroads with

each other in carrying grain to New York, the important change this year is due to the entrance of the new West Shore railroad, and in comparison with years previous to 1883 the Lackawanna has introduced a new factor. Thus, of the rail receipts of grain and flour in September, the railroads other than the New York Central, the Erie and the Pennsylvania had never carried so much as 35,000 bushels, or ¼ per cent. of the whole. But last year the addition of the Lackawanna swelled this amount to 395,770 bushels and 6.7 per cent. of the rail receipts, and this year, with the West Shore in the field, the amount carried by other roads than the old trunk lines has grown to 1,397,214 bushels and 18.6 per cent. of the whole. This leaves a smaller amount received by the three old roads than in any other year since 1877, except 1880. The effect of the introduction of the two new lines will be shown more exactly by the following statement of the receipts by each railroad in September in each of the last three years (grain and flour):

	1884.	1883.	1882.
N. Y. Cen.....	2,505,521	2,802,627	4,241,167
Erie.....	2,139,653	3,927,942	2,602,441
Penna.....	1,473,750	1,587,148	1,850,693
The three.....	6,118,924	8,317,717	8,694,601
Lackawanna.....	545,628	562,184	.....
Other roads.....	851,586	33,586	19,414
Total.....	7,516,138	8,913,487	8,714,015

Last year the Erie had an exceptionally and artificially large proportion of the business—September being one of the months when it made more than a million of net earnings—and the New York Central's proportion was unusually small (33.2 per cent. of the whole by the three old lines, against about 50 per cent. in most previous years). This year the latter has largely increased its proportion of the receipts by the three old lines (to 41 per cent.), but in amount they remain smaller than in any other year in the table—less even than in 1876 and 1877. The Erie's proportion is larger than in any other year except last year, yet the amount is less than in any other year since 1877. The Pennsylvania alone seems unaffected by the opening of the new lines to Buffalo, having brought to New York a larger proportion of the whole than in any other year except 1882. In explanation of this it should be noted that it carries comparatively little grain to New York, but a great deal of flour.

The West Shore brought much more grain to New York in September than in any other month except June. The reports do not separate them from those by "other roads," but the latter are always trifling, and were less than 35,000 bushels last year, when they were largest, so that we may safely say that as much as 810,000 bushels were brought by the West Shore last September, and 11 per cent. of the rail grain. The Lackawanna brought nearly the same amount as last year (545,628 bushels), and 1 per cent. more of the total, but a third less than the West Shore, which apparently had more effective arrangements for securing traffic than previously.

That these two railroads should so early be able to secure 18.6 per cent. of the total rail shipments of grain and flour to New York, shows that they must have considerable effect on the traffic of the old trunk lines to Buffalo. This, however, is the east-bound traffic which can most easily be secured. A railroad to Buffalo is not dependent for it on the railroads west of Buffalo, but can get it from lake vessels in spite of the opposition of all the railroads. It remains less than the proportion of the New York shipments of through freight to the West which has been awarded to these railroads in the pool. It is also very much less important. Even at full rates, the total rail receipts of grain and flour at New York, in September, cannot have yielded much more than \$400,000 of gross earnings to the trunk lines east of Buffalo and Pittsburgh, and about \$480,000 last year, which is not more than 5 per cent. of their total earnings in a fairly good September. The most that any one of them ever received from this traffic in September was probably less than \$250,000. To lose one-half of this, even, is not a tremendous loss. But the figures are important because they give some indication of the general course of traffic, and of the success of the new lines in obtaining a share of it.

The percentage of the total rail receipts of flour and grain at New York in September brought by each of the railroads has been as follows for the last nine years:

Year.	N. Y. Cen.	Erie.	Penna.	Lack.	Other roads.
1884.....	33.3	28.5	19.6	7.3	11.3
1883.....	31.4	44.1	17.8	6.3	0.4
1882.....	46.7	29.9	21.2	..	0.2
1881.....	49.5	32.2	18.2	..	0.1
1880.....	47.6	39.6	12.6	..	0.2
1879.....	52.8	34.0	13.0	..	0.2
1878.....	50.9	31.2	17.7	..	0.2
1877.....	51.6	34.4	13.7	..	0.3
1876.....	59.5	25.9	14.2	..	0.3

Thus the New York Central, which usually has had about half of the traffic, this year had but one-third of it; the difference between it and the Erie is less than

it used to be, but the latter's share is the smallest since 1876. The Pennsylvania, on the other hand, had a larger proportion of the whole than before since 1876, except in 1882.

## Chicago Shipments Eastward.

The Chicago through shipments eastward, including all freight covered by the pool—that is, all freight (except live-stock) going as far east as the western termini of the trunk lines, at Buffalo, Pittsburgh, etc., including that billed at Chicago or coming to the roads east of Chicago either in that city (this year) at the various junction points near Chicago—during the month of September, for six successive years have been:

1879.	1880.	1881.	1882.	1883.	1884.
134,141	151,404	265,414	153,234	194,124	166,729

The shipments this year were thus 14 per cent. less than last year, but more than in any other year except during the railroad war of 1891. It should be remembered, however, that until this year the shipments of the junction points outside of Chicago were not included, and that these are an important part of the whole, especially from Joliet and Matteson, where the Blue Line freight of the Chicago & Alton and the Illinois Central is turned over to the Michigan Central. Is this had been included in previous years, it is doubtful if there is any of them except 1879 that would show smaller shipments than this year.

So far as the rates are concerned, shipments were stimulated this year during the last ten days of the month by reductions from 25 to 20 and 15 cents, made irregularly, and applying to the larger part of the shipments only for a few days, probably. But there were also irregularities in the rates last year, which extended throughout the month and probably affected a much larger part of the month's business than the cut rates of this year, though the cuts were not so great and probably not so generally made as for a few days this year. All the roads carrying from Chicago were carrying last year also in September, but two of them have been opened since 1882. The two new roads carried 16 per cent. of the total shipments this year, so that the six old ones carried but 140,053 tons this year, which, not allowing for the shipments from junction points not heretofore reported, is a smaller amount than they have had before in September since 1879, which was before the Chicago & Grand Trunk was opened. The earnings from the traffic this year by the roads at the Chicago end were about \$400,000, less any irregular rebates that may have been made, and the largest amount earned by any one railroad at that end was not more than \$5,000, this being subject to the apportionment, in accordance with which the roads that carry more than their share of the whole will have to pay over the gross earnings from it to those which carry less. What the several shares will be is not yet determined, and Judge Cooley, to whose arbitration the question has been left, is in New York this week to examine the arguments and statistics preparatory to making the award.

Since the advance from the 15-cent rate, at which shipments were made from the end of March to the end of June, the shipments have been lighter than usual this year, as follows:

	1879.	1880.	1881.	1882.	1883.	1884.
July.....	145,788	160,187	259,253	85,039	138,656	152,828
August.....	162,263	169,314	280,608	138,241	166,271	146,922
September.....	134,141	151,404	265,414	153,234	194,124	166,729
Three mos.....	442,192	490,905	785,275	386,514	499,053	466,479

Thus the shipments of these three months were 6½ per cent. less than last year, without considering the shipments from junction points, 21 per cent. more than in 1882, when the failure of the corn crop of the year before greatly reduced shipments, 40 per cent. less than in 1881, when the rail rates were only from 12½ to 15 cents per 100, 3 per cent. less than in 1880, when the rate was 30 cents and well maintained, and 5 per cent. more than in 1879, when the rates were very low in July, were restored in August, and were 30 cents through September.

Considering the greater number of railroads among which the traffic is divided, the inclusion of the shipments of junction points in the total this year for the first time, and the lowness of the rate, which even when maintained was less this year than in any previous to 1881 (the same as in 1882 and 1883), the Chicago business probably yielded less gross earnings to any of the railroads carrying it than in any other year of the six except 1882, and less net than in any other except 1881 and 1882, and possibly 1883.

In 1879 and 1880, shipments were much larger in October than in September, in the other years, about the same. This year the shipments were stimulated by low rates during the first week or so, but have been less than last year since. Freight is accumulating at Chicago, however, by receipts of wheat in excess of ship-



ments, and though there has within a week been a large advance in lake rates, there is now not time enough for large lake shipments. The conditions are such as to make possible a very heavy winter movement, but whether it will be larger or not depends largely on the price of wheat and the disposition of grain merchants and speculators. A very large corn movement is almost certain, because the corn is needed for consumption. But the world can do without our wheat until after next harvest, and if the arrangement of speculators favor it, the Northwestern surplus may be held until the lakes open in the spring, and the winter shipments be confined chiefly to the supply of the East, which requires a great deal, and the flour, which we are manufacturing in larger quantities than ever before and exporting much more freely than wheat.

#### The Color of Safety Signals.

Referring to the letter from "N. E." on the color of safety signals, which we print in this number of the *Railroad Gazette*, and to one from Mr. J. E. Ralph, and to our editorial in the number for Oct. 17, we do not yet perceive that we are in accord, although "N. E." professes to discover an agreement. We are united, certainly, in our purpose, which is to discover what is the best safety signal to be used at night.

The experience of England, France and of the United States, on those lines where the fastest trains are run, and upon those most extensively fitted with signals, has led to their adoption of the white uncolored lens, placed high, shining bright and as far as possible. This, of course, does not close the debate entirely, although it does show the conclusion arrived at when the question has been raised before; for it is not a new proposition to use a white translucent globe as a signal.

When a train is running at from fifty to sixty miles an hour, if there is any information to be communicated to the locomotive runner, it should be done at the earliest practicable moment, in the surest way possible; hence the great importance of advancing the danger signal towards him, and of making it as conspicuous as possible. If he is to be influenced by the safety signal, he should certainly be able to see it from as great a distance as he does the danger signal; in point of fact, however, the safety signal does not govern the engineer of a fast train; he must and does run upon the confident expectation that if everything is not right, a danger signal will be shown. The safety signal is a comfort to him, it shows that those upon whom he must rely have attended to their duty, it cheers him on as by a fresh injection of confidence; and it would seem best to give him its reassuring light from as great a distance as may be. When so assured, he can take a moment to look after the working of his machine. Incidentally, the safety signal shows the engineman where the danger signal should appear, if all were not right, and it serves to fix his exact position in space upon a dark night; yet he would not be regarded as a strictly truthful person who should assert that he would certainly remark the absence of any one of the multitude of safety (or clear) signals, which he is accustomed to pass at full speed, on a road which is thoroughly equipped with signals. He would, of course, notice at once the absence of a light, if missing at an isolated place, and he ought to be required to stop in such a case, as if a danger signal had been shown; but, in order that he may miss its accustomed gleam, it should be bright and conspicuous.

There have been eminent railroad men who maintained the doctrine that no such thing as a safety signal should exist; that the only signal should mean danger; the absence of signals should indicate safety; and this system has worked very well on roads with small traffic without complicated junctions or great yards. On such roads the "dim, religious light" which Mr. Ralph advocates would do perfectly well.

As to the green light, it is now used in switch lamps on several roads to indicate safety; but in a very extensive system of signaling it is too valuable for other indications to be spared for this, which, we think, is perhaps the least important signal; yet, if to be given at all, should be seen afar off, else it is comparatively useless.

By the use of lenses and by placing them in conspicuous positions, the clear signals can almost always be distinguished from white lanterns or from other common lights.

As to signals carried by engines, they should have a defined position from which no variation ought to be permitted. This is easily arranged for, and would seem to admit of no confusion. As the locomotive of a fast train passes very rapidly, the brighter signal would seem to possess advantages over the dim one, even upon engines.

#### Sunday Trains in Massachusetts.

One of the matters which have lately been pressed upon the attention of the Massachusetts Railroad Commissioners is the question of Sunday trains. The Massachusetts law in relation to the observance of Sunday prohibits all business or labor on the "Lord's Day" except "works of necessity and charity" and all travel "except from necessity or charity." The statute has come down from the past, but the Puritanical observance of Sunday has passed out of fashion except in some of the small country towns, though generally it is rationally and quietly observed. In the matter of transportation of passengers in the large cities, the horse-cars are run as much and in the summer even more than on week days, and more or less suburban trains are run on all the railroads to and from Boston. Through trains between Boston and important centres in other states have also been run for years. All this was in violation of law, but public opinion sustained the violation rather than the law.

Two or three years ago, in view of this change of public opinion, an attempt was made to repeal or modify the law, in order that what almost everybody approved might be done without incurring the penalties attached to the offense, especially so far as travel and passenger transportation were concerned. The state owned the Troy & Greenfield Railroad, and it was desirable that this line to the West should be able to compete with other lines, but it was not desirable that the state should participate in a violation of its own laws.

The members of the Legislature, however, were not ready to ignore the traditions of the Puritan Commonwealth by a repeal or essential modification of its Sunday law, and they therefore resorted to a compromise. Possibly they wished to escape the odium which might attach to the permission of Sunday trains, and they shifted the responsibility to the Railroad Commissioners. They accordingly passed a law that "the Board of Railroad Commissioners may authorize the running, upon any railroad, of such through trains on the Lord's Day as, in the opinion of the Board, the public necessity and convenience may require, having regard to the due observance of the day."

Under this law the Railroad Commissioners have heretofore authorized the running of several through trains over the Hoosac Tunnel Line, notably the Boston Herald train to Saratoga during two months of the summer season. And now arrangements having been made for running trains over this line between Boston and St. Louis, the railroad companies composing the line in this state have asked for authority to run one such train each way on Sunday. The managers of their Western connections say that unless the trains can be run daily they will be of no use, and that it would be absurd if a train starting from St. Louis for Boston on Friday is to be stopped at the Massachusetts state line on Sunday. But some of the good people of Greenfield remonstrated against this desecration of the Sabbath, as they termed it, and the Railroad Commissioners recently gave a hearing at that place on the petition, when considerable testimony *pro* and *con.* was offered. The decision of the Board was reserved, the remonstrants desiring the privilege in the meantime to present further remonstrances. The advocates of the train also took the opportunity to circulate petitions, and the result was that something less than two thousand men and women, some living on the line and other remote from it, signed the remonstrances, and upwards of four thousand voters in towns along the line petitioned for the trains. Thus the matter stands, temporary permission having been given meanwhile for the running of the trains.

At Springfield there was recently an anti-Sunday-train movement of a different kind. A large number of petitioners asked that the Sunday freight trains on the Boston & Albany Railroad be discontinued. The matter was brought before the Railroad Commissioners, and a hearing was given by the Chairman. The movement was ostensibly in the interest of the employes, and at the hearing a number of past employes stated that they had left the road on account of Sunday work; but on the part of the railroad company it was stated that no employe was required to work on Sunday, and that no one was discharged for refusing to work on that day. It was also stated that only trains with live stock and perishable freight were run east, and chiefly trains of empty cars west, a comparatively small number altogether. The objection was made by the petitioners to the Sunday through passenger trains, and not so much stress was laid on the disturbance caused by the movement of trains as on the infringement on the rights of the employes to a day of rest. It is evident, however, that out of the large number of employes of the Boston & Albany Railroad there would always be a sufficient number perfectly willing to

operate the Sunday trains for the sake of the additional day's pay. So far as this petition is concerned, therefore, the question seems to be resolved into this: If no one is compelled to work by fear of a discharge, shall the law be invoked to enforce a day of rest for those who are willing and desire to work? And that raises the general question of the wisdom of Sunday laws, which we do not propose to discuss.

But, however much objection there may be to the prohibition of Sunday trains *by law*, it is certainly desirable, for the sake of the employes, that the number should be limited as much as possible. Entirely apart from considerations of religion, the men are the better for a regular day of rest which comes when other people also have a day of rest. Further, in a community where Sunday work is considered sinful by many or most people, the man who works on that day, however firmly he may believe the work to be proper, must feel that he is offending the moral sense of many good people in the community, whose respect he should desire and is the better for desiring. Men usually need all the influences that it is possible to secure to make them upright and devoted to duty, including the sympathy and support of their fellows; and they should not lightly do even indifferent things which expose them to the condemnation of good men.

One of the two remaining important gravity railroads in the United States, that of the Pennsylvania Coal Company, extending from the Lackawaxen-Hawley line (owned by the same company but leased to the Erie) and the Delaware & Hudson Canal at Hawley over the mountain to the mines about Pittston, a distance of 47 miles, is likely soon to be abandoned to make room for a locomotive railroad, the Erie & Wyoming, which has just been built in the interest of the coal company and the Erie, between the same places, but over a different route. The gravity railroad has served to carry the heavy eastward shipments of the coal company to the Erie, but as it is of 4 ft. 3 in. gauge, a transfer was necessary at Hawley, while now the locomotives will take the coal trains directly from the mines about Pittston to Newburg or other market or shipping point. But the avoidance of the transfer is not the only advantage secured by the new road. Westward shipments of anthracite over the Erie are received by it at Carbondale, on the Jefferson Branch, extending from the main line at Jefferson Junction nearly due south 34 miles and over independent railroads 10 to 20 miles further. These shipments westward can be made most advantageously in box cars which would otherwise go west empty. To get these cars to the mines it has been necessary to take them empty from New York northwest to Jefferson Junction 188 miles, and then south 40 miles or more, partly over the tracks of roads not interested in moving them promptly. By the new road the detour will be saved, for the distance by way of it and the Carbondale Branch to Jefferson Junction is about the same as by the main line, so that 80 miles and more of the hauling of empty cars will be saved, the Erie & Wyoming and the Carbondale Branch, with a few miles of intervening railroad owned by other companies, forming a loop with the main line between Lackawaxen and Jefferson Junction.

Some idea of the importance of the traffic to be handled may be gained from the coal shipments of the Pennsylvania Coal Company, which for six years have been, in tons:

1878.	1879.	1880.	1881.	1882.	1883.
989,525	1,463,210	1,124,264	1,610,326	1,628,320	1,788,027

All the east-bound shipments will pass over the new railroad and the Erie, but the west-bound shipments will use little or no part of the new road. Besides the shipments of this company, the Erie itself has a considerable anthracite property near this road, and it carries the westward shipments of the Delaware & Hudson Canal Co., for which the new road offers advantages.

The Pennsylvania Coal Company's Railroad is, we believe, not a common carrier. At least its earnings and expenses are not reported separately from those of the coal mines, and its earnings from freight other than coal were but \$33,774 (\$719 per mile) last year. It has 3,200 coal cars, but only 60 other freight cars, and 11 passenger cars.

The gravity railroad of the Delaware & Hudson Canal Company is but a few miles north of the one just described. It also is of 4 ft. 3 in. gauge, and is 28 miles long from Honesdale (9 miles northwest of Hawley) to Oliphant (about as far southwest of Carbondale). This company shipped 846,760 tons of coal west over the Erie last year. It can deliver this coal near Carbondale by its own railroad, but the Erie's new line serves as well for getting its empty box cars there as for other westward coal shipments. Substan-



tially the new road gives the Erie a line directly through the anthracite country, which heretofore was reached only by branches.

A letter to the London *Times* condemns the practice in England, only recently common, of making political speeches from the cars of the train on which the orator is traveling, or from the platforms of stations where the train halts for a moment. The writer says: "The derangement of the ordinary traffic, the delays on main lines and the dislocation of branch line services, and the liability to personal accidents, owing to the invasion of railway platforms by crowds of excited partisans, constitute a great and growing evil, which directors of railways should sternly discountenance, no matter which party the traveling orators may represent."

As the Walrus said in "Alice in Wonderland," "We deeply sympathize"; but are sorry that we cannot point out to our English cousins any effectual remedy for this sort of thing. In this country we have got beyond such futile moves as begging boards of directors to charge for the haulage of private cars. Unfortunately, our more heroic remedies have proved utterly useless. The candidate is treated to a good collision, some cars are smashed, some legs and arms are broken, and a fireman suffers from a bad black eye;—but the candidate merely says "Rather a sudden stop," and delivers seventeen orations from the rear platform next day. A run-off on an embankment is even more unsuccessful; the candidate appears to be made of rubber. Then the shaking hands when the train is moving off is tried, but hitherto the results have been disappointing. No one has been killed as yet, or even has lost a limb—or a tongue. The inventive genius of the country is utterly baffled, and every other car platform has its orator.

Thirteen more railroads report their September earnings this week, including some of the most important ones. All but three, and these very small ones, show a decrease in earnings. That of the Pennsylvania is only 3.8 per cent., and this from a very large month's earnings last year; the Northern Central, however, lost 12.7 per cent., the Reading 13.7, the Eastern 0.6 per cent. The West Jersey made the very large gain of 18.4 per cent. Further west the Ohio & Mississippi lost 20.3 per cent. In the South there are decreases of 6 per cent. on the Norfolk & Western, 6½ on the East Tennessee, 11 on the Shenandoah Valley, 17½ on the South Carolina, and 17½ on the Gulf, Colorado & Santa Fe. Two bad cotton crops in succession are having the natural effect on the earnings of Southern railroads.

#### September Accidents.

Our record of train accidents in September, which will be found on another page, gives brief accounts of 46 collisions, 50 derailments and 4 other accidents; 100 accidents in all, in which 21 persons were killed and 174 injured. The number of accidents was greater than in August, and indeed greater than that recorded in any month since February.

As compared with September, 1884, there was a decrease of 58 accidents, of 23 in the number killed, and of 9 in that of persons injured.

These accidents may be classed as to their nature and causes as follows:

COLLISIONS.			
Rear	27		
Butting	16		
Crossing	3		
DERAILMENTS:			
Broken rail	1		
Broken frog	1		
Broken bridge	2		
Spreading of rails	2		
Broken wheel	1		
Broken axle	4		
Broken coupling	4		
Accidental obstruction	1		
Cattle	6		
Land-slide	1		
Wash-out	1		
Misplaced switch	8		
Open draw	2		
Malicious obstruction	1		
Unexplained	16		
OTHER ACCIDENTS:			
Broken coupling-rod	1		
Oil tank burst	1		
Cars burned while running	2		
Total			
	46	50	100

Six collisions were caused by trains breaking in two; three by mistakes in orders or failure to obey them; two by carelessness in putting trains on sidings; two by failure to use signals properly, one each by fog, by cars blown out of a siding, by the wreck of a preceding train, by the breaking of a locomotive throttle valve and by a misplaced switch.

A general classification of these accidents may be made as follows:

	Collisions.	Derailments.	Other.	Total.
Defects of road	7	7	1	15
Defects of equipment	7	7	1	15
Negligence in operating	36	10	4	50
Unforeseen obstructions	3	9	3	15
Maliciously caused	1	1	1	3
Unexplained	16	16	4	36
Total				
	46	50	4	100

Negligence in operating was the chief general cause, no less than 46 per cent. of all the accidents coming under that head. Defects of equipment and unforeseen obstructions come next, each furnishing 15 per cent. of the total.

A division according to classes of trains and accidents is as follows:

Accidents:	Collisions.	Derailments.	Other.	Total.
To passenger trains	6	21	1	28
To a pass. and a freight	14	14	14	42
To freight trains	26	29	3	58
Total				
	46	50	4	100

This shows accidents to a total of 146 trains, of which 48, or 33 per cent., were passenger trains, and 98, or 67 per cent., were freight trains. As has often before been noted, this shows more than the true proportion of accidents to passenger trains, as it is the freight-train accidents which are most likely to escape record and notice.

Of the total number of accidents 55 are recorded as happening in daylight and 45 at night. It might be supposed that accidents were more likely to happen in darkness, but this does not appear to be the rule by any means.

The persons killed and injured were as follows:

	Killed.			Injured.		
	Em-plo-ys.	Others.	Total.	Em-plo-ys.	Others.	Total.
In collisions	8	1	9	25	63	88
In derailments	10	1	11	19	62	81
In other accidents	1	1	2	1	1	2
Total						
	18	3	21	45	125	174

Employees thus formed 86 per cent. of the killed, 28 per cent. of the injured and 34½ per cent. of the whole number of casualties. This is a smaller proportion than usual, and is due to the injury of a considerable number of passengers in a few accidents.

Persons were killed in 6 collisions, 10 derailments and 1 other accident, and injuries, but not death, were caused by 20 collisions, 10 derailments and 1 other accident. In all, 17 accidents caused the death of one or more persons, while 31 others caused injuries, but not death, leaving 52, or 52 per cent. of the whole number, in which there was no personal injury serious enough for record.

The month presents no unusual feature except in the number of collisions, that class of accidents forming a higher proportion of the total number of accidents than for several months past. This may have been due to heavier traffic in part, but it was probably due in part also to the absence of derailments caused by the weather. The month was an unusually dry one in nearly all parts of the country, and there are hardly any wash-outs and similar accidents recorded. Only two accidents, a very small number, are attributed to spreading of rails, and the broken bridges also numbered two only.

Misplaced switches appear as the cause of 9 accidents, 8 derailments, but only 1 collision being charged to that particular form of carelessness. Two accidents resulted from open draw-bridges; in one of these cases the bridge was supplied with interlocking signals of the most approved kind, and the only possible explanation appears to be that the engineer failed to see them; that he should deliberately disregard them does not appear possible.

The number of broken axles is large for a month of warm weather, and again suggests the probable overloading of cars. There was, however, but one broken wheel and no broken trucks.

Inventors of car-couplers may note that 7 accidents, 6 collisions, and 1 derailment are charged to broken couplings and may draw the conclusion that their services are needed, not only to supply an automatic coupler, but also to provide one which shall prevent the breaking of trains. Master car-builders might also draw the conclusion that consolidation engines and 20-ton cars make better or heavier draw-gear necessary to secure the safety of trains on their roads.

A somewhat unusual accident was the explosion of an oil tank car while the train was in motion. The explanation given for this was a slight leakage, making a pool of oil which was fired by a spark from the engine, but this does not explain how the fire could have communicated with the interior of the tank.

For the first time for several months no boiler explosion is recorded. Two cases of cars burned while running appear, both in the South, where the carrying of cotton on flat cars gives opportunities for this kind of accident. There was one malicious derailment, caused by obstructions placed on the track.

For the year ending with September the record is as follows:

	Accidents.	Killed.	Injured.
October	174	43	234
November	122	34	235
December	112	32	113
January	147	50	240
February	110	22	150
March	115	26	112
April	88	19	168
May	76	32	150
June	71	40	103
July	80	25	142
August	80	38	112
September	100	21	174
Total			
	1,293	385	1,933
Total, same months, 1882-83	1,641	476	1,801
" " " 1881-82	1,332	385	1,467
" " " 1880-81	1,481	435	1,691

The yearly average for the four years was 1,437 accidents, 421 killed and 1,733 injured. Last year was below the average, except in the number injured, which has been large in nearly every month of the year.

The averages per month for the year were 108 accidents, 32 killed and 161 injured, September being below these averages except in the number injured.

The averages per day for the month were 3.33 accidents, 0.70 killed and 5.80 injured; for the year, they were 3.53 accidents, 1.06 killed and 5.28 injured.

The average casualties per accident were, for September, 0.310 killed and 1.740 injured; for the year, 0.301 killed and 1.495 injured, the month having less than the year's average of killed, but more of injured.

#### Pennsylvania Railroad Earnings in September.

The gross earnings of the Pennsylvania Railroad east of Pittsburgh and Erie last September were larger than in any other month of the year except August, and there has been for five years on this road a decrease from August to September, amounting to the following sums:

1880.	1881.	1882.	1883.	1884.
\$75,812	\$74,972	\$253,576	\$140,381	\$159,023

The decrease does not indicate any unusual change in the course of earnings this year.

In comparison with last year, there was a decrease of \$176,127 (3.8 per cent.) in gross earnings, but the decrease in working expenses was four-fifths of this amount, leaving the decrease in net earnings only \$34,970 (1.8 per cent.), which is not an astonishingly favorable result in view of the general condition of traffic.

For twelve successive years the gross and net earnings and expenses of these lines in the month of September have been:

#### Pennsylvania Railroad Earnings and Expenses in September.

Year.	Gross earnings.	Expenses.	Net earnings.
1873	\$4,039,196	\$2,195,096	\$1,784,100
1874	3,252,228	2,039,810	2,212,418
1875	3,571,057	1,807,504	1,673,553
1876	3,869,994	1,648,320	2,220,674
1877	3,006,408	1,471,691	1,534,717
1878	2,858,946	1,456,451	1,402,495
1879	3,336,329	1,745,891	1,590,438
1880	3,647,543	2,172,634	1,474,909
1881	3,735,006	2,271,829	1,463,177
1882	4,417,002	2,683,176	1,734,826
1883	4,634,990	2,712,635	1,922,355
1884	4,458,871	2,571,557	1,887,314

Thus the gross earnings were larger this year than in any other except last year, the working expenses larger than in any except 1882 and 1883, and the net earnings larger than in any except last year and 1876, in which latter year came the heavy Centennial travel.

While there was this favorable result on the Eastern system, the lines west of Pittsburgh and Erie do not compare well with previous years, though they did better than in any other month of this year. The surplus earned by these lines in September over all liabilities for six successive years has been:

1879.	1880.	1881.	1882.	1883.	1884.
\$345,688	\$222,018	\$214,113	\$445,870	\$321,789	\$52,845

For the nine months ending with September the gross and net earnings and working expenses of the lines east of Pittsburgh and Erie for eight successive years have been:

#### Pennsylvania Railroad Earnings and Expenses for Nine Months.

Year.	Gross earnings.	Expenses.	Net earnings.
1877	\$22,068,250	\$14,088,741	\$7,917,515
1878	22,819,918	13,534,111	9,285,807
1879	24,516,214	14,823,166	9,693,108
1880	30,253,617	17,827,312	12,426,305
1881	32,378,246	19,482,436	13,395,810
1882	35,887,786	22,283,280	13,604,506
1883	37,892,916	23,516,264	14,076,652
1884	36,398,108	22,855,843	13,542,265

Compared with last year the decreases for the nine months are:

Amount.	Gross earnings.	Expenses.	Net earnings.
\$1,494,808	\$1,494,808	\$960,521	\$534,287
Per cent.	3.9	4.0	3.8

The gross earnings and expenses this year were exceeded only in 1883; the net earnings in 1882 also.

The result of the working of the lines west of Pittsburgh and Erie for the nine months has been the following surplus over all liabilities for interest rental, etc., for six years past:

1879.	1880.	1881.	1882.	1883.	1884.
\$108,834	\$2,096,565	\$2,268,783	\$1,067,772	\$894,318	\$649,523

Thus the decrease in the profits of this system since last year has been \$1,543,841, which is nearly three times as great as the decrease in the net earnings of the eastern system. Adding the surplus and subtracting the deficit of the western lines, to and from the net earnings of the eastern lines, we have as the profits of the Pennsylvania Railroad Company for the nine months:

1879.	1880.	1881.	1882.	1883.	1884.
\$9,801,942	\$14,522,870	\$15,061,593	\$14,672,278	\$14,970,770	\$12,892,742

This year the amount is the smallest since 1879, 14 per cent. less than last year, and 17½ per cent. less than in 1881, when it was largest.

The movement of spring wheat seems to be increasing, and that of winter wheat decreasing. Duluth, which receives spring wheat exclusively, in the week to Oct. 18 received more than in any other week save one; Milwaukee, which receives scarcely any winter wheat, had its largest wheat receipts for the year in that week. Chicago, which receives both, had the largest for eight weeks. At St. Louis, Toledo and Detroit the wheat receipts have fallen off.

Lake rates have advanced to 3 cents per bushel for wheat from New York to Buffalo; canal rates remain unchanged at 5½ cents from Buffalo to New York; the canal shipments are large, but must soon cease. Ocean rates have advanced to 4½ d. to 4½ d. for grain by steam from New York to Liverpool.

The Chicago through and local shipments eastward of flour, grain and provisions for the week ending Oct. 25, by the incomplete report to the Board of Trade have been, in tons, for the last four years:

1881.	1882.	1883.	1884.
46,647	26,027	42,449	30,068

Thus the shipments this year were 8 per cent. less than



last year, and 14 per cent. less than in 1881, but 50 per cent. more than in 1882. For six successive weeks the total tons shipped and the percentage going by each railroad have been:

	Sept.	Sept.	Oct.	Oct.	Oct.	Oct.
Tons:	20.	27.	4.	11.	18.	25.
Flour.....	3,823	5,398	7,186	9,403	7,612	7,585
Grain.....	22,916	26,514	33,592	36,235	22,370	23,870
Provisions.....	7,420	8,579	8,636	10,002	6,795	7,610
Total.....	34,159	40,516	49,414	55,640	36,777	39,065
Per cent:						
C. & Grand T.....	8.4	6.6	2.8	3.7	5.8	7.6
Mich. Cen.....	8.7	17.0	19.6	15.3	17.9	20.7
Lake Shore.....	14.7	15.5	17.2	26.0	21.2	17.1
Nickel Plate.....	8.2	7.7	11.8	12.3	9.6	9.0
Ft. Wayne.....	20.8	17.3	15.6	12.8	18.6	14.0
C. St. L. & P.....	14.5	16.6	16.9	11.5	11.0	14.0
Balt. & Ohio.....	9.1	8.0	9.4	7.9	5.8	6.9
Ch. & Atlantic.....	15.6	11.3	6.7	10.5	7.1	10.7
Total.....	100.0	100.0	100.0	100.0	100.0	100.0

Thus the total shipments last week were 6 per cent. more than the week before, but less than in any of the three weeks previous. The increase last week was 6½ per cent. in grain and 12 per cent. in provisions, and nothing in flour.

The percentages were not so widely different from the averages as they had been for a few weeks previous. The Chicago & Grand Trunk still had a small share of the shipments, yet it was the largest it has had for four weeks. The three Vanderbilt roads, taking them all together, had a smaller share than before for three weeks, their aggregate percentage having been 49.6, 53.6, 51.7 and 46.8 for the last four weeks successively. It should be remembered that these shipments include a considerable amount (shipments to points west of Buffalo, Pittsburgh and other western termini of the Eastern trunk lines) that is not covered by the pool, and, on the other hand, that the pool covers a still larger amount that is not included in these statistics, so that the percentages above are significant chiefly as indicating whether a line is gaining or losing, and do not show how large a part of the pooled business any line is getting. The railroads which carry little freight from Chicago to local points are likely to have a larger share of the pooled through freight than the above figures indicate, and vice versa.

Last week the Chicago & Grand Trunk had something like its old proportion of the provision shipments, namely, 23½ per cent., while the Chicago, St. Louis & Pittsburgh had 18 per cent.

#### Record of New Railroad Construction.

Information of the laying of track on new railroads is given in the present number of the *Railroad Gazette* as follows:

**Cape Fear & Yadkin Valley.**—Extended from Shoe Heel, N. C., southwest to Bennettsville, S. C., 24 miles.

**Columbus & Cincinnati Midland.**—Extended from Wilmington, O., southwest to Clinton Valley, 11 miles, completing the road.

**Jackson Branch.**—Completed from Allenville, Mo., north to Jackson, 16 miles.

**Minneapolis, Sault Ste. Marie & Atlantic.**—Extended from Soft Maple, Wis., east to Bruce, 11 miles.

**New York, Philadelphia & Norfolk.**—Extended from Rastville, Va., southward to Cape Charles City, 13 miles, completing the road.

**Oregon Railway & Navigation Co.**—Track on the Baker City Branch is laid to a point thirteen miles from Huntington, Or., an extension of 11 miles.

**Southern Kansas.**—Extended from Harper, Kan., west to Attica, 12 miles.

This is a total of 98 miles of new railroad, making 3,030 miles reported to date for the current year. The total track reported laid to the corresponding date for 13 years past is as follows:

	Miles.		Miles.
1884.....	3,030	1877.....	1,824
1883.....	5,188	1876.....	1,913
1882.....	8,446	1875.....	1,080
1881.....	5,763	1874.....	1,524
1880.....	4,614	1873.....	3,130
1879.....	2,859	1872.....	6,106
1878.....	1,724		

These statements include *main track only*, no account being taken of second tracks or other additional tracks or sidings.

#### Foreign Railroad Notes.

The German *Organ for Railroad Progress* in its last number has an account of the Sykes block signal apparatus manufactured by the Union Switch and Signal Co.

The Trans-Caucasian Railroad was opened in the spring of 1883. In a little over seven months it carried nearly 800,000 casks of petroleum. The total production in this district for the past four years has been as follows in gallons:

	1880.	1881.	1882.	1883.
	41,100,000	61,650,000	60,150,000	75,600,000

The increase is rapid, but as yet the total production is insignificant compared with that of this country, which exported more than 500 million gallons last year. But the above figures of the Russian product are much less than some that have been reported, one statement giving the product in 1882 as 200 million gallons.

A proposition has been made to make a certain railroad in Russia a government road, the reason given being that it is very unprofitable. In 1881, when the road was first opened, the receipts were 185,406 rubles, and the expenses 220,542; in 1882 the receipts rose to about 190,000 rubles, and the expenses fell to 189,000. Meanwhile the company owes 6,500,000 rubles, which there seems no probability

of its ever paying. Exactly how it follows that the state should take up this unprofitable enterprise is not quite clear to the American mind. When we invest in railroads that don't pay we have to bear the loss ourselves, while the government goes on imposing taxes or perhaps insisting that our rates are too high.

They do things systematically in Austria. In response to a request from the refiners, they have after long investigation decided to reduce the rates on export sugar. Now the consuls are called upon to see whether the reduction of rates really makes any difference with the sale of Austrian sugar in foreign markets. One would suppose that the amount of shipments on through bills of lading might be trusted to tell its own story. Perhaps the government is afraid of some tricks on the part of the sugar refiners, who are said to have made the government pay them in the way of drawbacks for re-export, one year not very long ago, more than the whole amount collected on imports of raw sugar.

A curious feature of the British Board of Trade reports of exports of rails is the average value given for iron and steel rails. This year and last the reports make the value of the iron considerably greater than that of the steel. The averages shown by the reports in pounds and decimals thereof have been:

	1882.	1883.	1884.
Iron rails.....	\$6.35	\$6.83	\$6.62
Steel rails.....	6.63	5.94	5.41

According to this, steel was worth 4½ per cent. more than iron in 1882, but 13 per cent. less in 1883, and 18 per cent. less this year. But the reports also show average valuations considerably above ruling prices for steel even.

#### New Railroads on Indian Reservations.

The forthcoming report of the Commissioner of Indian Affairs to the Secretary of the Interior gives the following information:

**Milwaukee, Lake Shore & Western.**—June 26 last the Interior Department authorized a preliminary survey for an extension from the Montreal River between Wisconsin and Michigan to Ashland, Wis. The survey was begun but has not been completed. Subject to the consent of the Indians and a bond by the company for \$20,000 to indemnify them for right of way and damages, the Department authorized the company to proceed with construction on the reservation. A treaty provides for right of way for a railroad, and the Indians desire one. The bond has been given and the work will be permitted if the Indians do not object.

**Jamestown & Northern (Northern Pacific).**—The Department decided not to disturb the western boundary of the Devil's Lake Reservation. Aug. 6 a council of Indians proposed that the company should pay \$10 per acre for the land required for the railroad, erect a station and a storehouse for government property on the reservation, and agree to erect no other building, and to permit none but necessary employees to reside within the reservation. The company accepted this proposition, and filed the location of a line 17 miles long through the reserve. Doubt arising as to the authority under the treaty with the Sisseton and Wahpeton Indians to grant right of way without further legislation by Congress, the Department ordered a history of the case, with recommendations, to be submitted to Congress, which will be done at the next session.

**Northern Pacific.**—An agreement between the Indians and the United States, extinguishing the Indian title to certain lands required by this railroad on the Flathead (Jocko) Reserve in Montana was ratified by Congress July 4, and it appropriated \$16,000, previously paid into the Treasury by the railroad company, to pay the Indians for the lands.

**Utah & Northern.**—A map of definite location with plats of eight stations in Fort Hall, Idaho Reserve, was filed by this company June 12. The plats were found to be entirely unauthenticated and were returned.

The attention of the Department was also called to the fact that notwithstanding the road had been constructed and operated through the reservation for several years, it did not appear that the Indians had ever been compensated for the loss of their lands taken for right of way and station grounds—aggregating over 2,000 acres—and it was suggested that inasmuch as there were no treaty provisions authorizing the building of railroads through the reservation, legislation of Congress would be necessary to confirm the title of the company to the lands taken, which they claimed to have obtained under special acts of Congress which manifestly related only to right of way through the public lands of the United States. Under Department instructions of Sept. 24 last, a full statement of the matter will be prepared and submitted for presentation to Congress at the ensuing session for its determination as to whether or not it is the intention of the acts above mentioned to grant a right of way through the Indian reservation without compensation to the Indians located thereon.

**Atlantic & Pacific.**—The previous Commissioner of Indian Affairs having expressed the opinion that the branch road provided for by the act of July 27, 1866, should not be allowed to cross the country of the Creeks and Cherokees, but should have its line, so far as those countries are concerned, south of the Canadian and Arkansas rivers, the railroad company, in November last, filed an amended map of definite location of this branch road, according to which, the line eastward from the eastern boundary of the Seminole country to Fort Smith passes south of the Canadian and Arkansas rivers, and through lands of the Chickasaw and Choctaw Nations, thus bringing the road strictly within the interpretation placed by the Department in 1870 upon the several treaties and acts of 1866, providing for an east-and-west and a north-and-south railroad through the Indian Territory. The amended map was accepted by the Department Nov. 28, 1883.

**Gulf, Colorado & Santa Fe and Southern Kansas.**—At the last session of Congress acts were passed granting these companies the right of way through the Indian Territory, based upon the principle of the eminent domain in the Federal government in this territory. The Gulf, Colorado & Santa Fe is authorized to build from the Red River, opposite Cook County, Tex., northward to Kansas, the line to be located in sections of 25 miles each, to be approved by the Secretary of the Interior before construction is begun. The right of way for the open road will be 100 ft. wide, and for stations (one to 10 miles) 200 by 3,000 ft. in addition. Similar powers are given to the Southern Kansas from the Kansas border south of Winfield southward towards Denison, Tex., to the Red River at the mouth of the Washita, with a branch from the Kansas border at Medicine Lodge Creek southwestward by or near Camp Supply to the west line of the territory where Wolf Creek

crosses it. Provision is made for paying the Indians for land taken and the damages done, and for appraisers to determine the amount, and the railroad companies are bound not to endeavor to have any change made in the present tenure of the Indians in the lands. Regarding these grants the Commissioner says:

"The action of Congress in regard to these railroads practically overturns the theory of construction placed by this Department in 1870 upon the intent and meaning of the several acts of Congress and treaties of 1866, viz., that there should be but one east-and-west and but one north-and-south road through the Indian Territory, and that any additional roads without the consent of the Indians would be a violation of treaty provisions with the Indians, which has ever since governed this office in its action upon the general subject. On July 10 last the Cherokee delegates filed in the Department a written communication on behalf of the Cherokee Nation, protesting, for reasons therein assigned, against any action by the Department looking to the acceptance of any claim by the railway companies under these acts, for any portion of the right of way thereby granted, or any other right under said acts to any portion of the Cherokee domain or country, until action can be had by the Cherokee National Council at its approaching session in November next. The Cherokee Nation insists that its property cannot be taken and given to a private corporation of any state by Congress, and that the courts of the country will not sustain such a seizure or violation of the contract made by the United States in its treaties with the Cherokee Nation."

**St. Louis & San Francisco.**—This company filed a map of definite location through the lands of the Choctaw and Chickasaw nations in the Indian Territory Sept. 22, 1883, in accordance with the act of Congress of Aug. 2, 1882.

**Idaho, Clear Water & Montana Transportation Co.**—The last report mentioned the hostility of the Nez Perce Indians to building railroads through their reservation. A council of them was held in April, 1883, again resulted in refusing permission for a preliminary survey. There being a division among the Indians, however, the question whether under the treaty authorizing the construction of "roads" through the reservation, the preliminary survey for a railroad should be permitted, was submitted to the Department, which has decided that the railroad company must apply to Congress.

**Chicago, Milwaukee & St. Paul.**—The agreement with the Sioux Indians occupying the reserve in Dakota provided for the location of three wagon roads on this reserve under military authority, and it was decided that a railroad survey could not be made until an agreement of the railroad company with the Indians had been ratified by Congress. A bill provided for this prepared in the Indian Office passed the Senate at the last session, but was not acted upon by the House, which, however, had previously favorably reported a similar bill, and precisely the same is true of the *Dakota Central Railway* (Chicago & Northwestern) in the same reservation.

The Indians of the Sisseton Reservation, Dakota, having finally declined to sign the new agreement with the Chicago, Milwaukee & St. Paul upon the ground of some misunderstanding as to the terms of the original contract, the Department decided to submit the whole question to Congress to decide the compensation to be paid for right of way. Subsequently the agent of the Sisseton Indians transmitted a communication from their chiefs and council and requested authority to make certain changes in the agreement which he thought would cover all objections and meet their views. He was directed to make such changes, and a bill covering the matter will be submitted at the next session of Congress.

**Oregon Railway & Navigation Co. (Pendleton & Centerville Branch).**—This company has accepted the terms and conditions upon which the Umatilla Indians consented to the construction of the branch through their reservation, giving \$5 per acre for the 152.8 acres required for right of way and station grounds and \$464.50 for individual Indian improvements.

**Carson & Colorado.**—A bill ratifying this company's agreement with the Pah-Utes for right of way through the Walker River Reservation in Nevada was presented at the last session of Congress, but was not acted upon.

#### Heating and Ventilating Cars Discussed by the New England Railroad Club.

At the regular meeting of the Club, held Oct. 22, at its room in the Boston & Albany depot, there was an attendance of 35 gentlemen. The President, Mr. F. D. Adams (Boston & Albany), took the chair. The Executive Committee presented a constitution and by-laws, which were unanimously accepted.

#### HEATING AND VENTILATING CARS.

This subject was then discussed, and Mr. Palmer, of Cambridge, Mass., who had devoted considerable attention to the matter, addressed the meeting on ventilation without heating.

Mr. PALMER advocated a system of ventilating railroad passenger cars in which the air is taken in over the platform, under the hood, is then strained from all impurities, dust, cinders, etc., and then passes through a box or tube along the deck of the car outside, and is admitted into the car through opening in the box. The impure or vitiated air is driven out at some convenient place at the bottom of the car where the foul air settles. This system is now in use with good results on horse cars, and is already applied on one railroad passenger car.

Mr. F. D. ADAMS (Boston & Albany): The Chase system is similar to Mr. Palmer's, and had been tried on the Boston & Albany; but there being no adequate means to prevent the dust or cinders from entering the tube, it was soon filled up and became ineffective. The Chase system, however, instead of admitting the air into the car through the deck, carried it down by means of the pipe near the stove, and admitted the air through strainers at the bottom of the car.

Mr. W. G. CREAMER (of New York): It is difficult to convince people of the importance of ventilation. To ventilate a railroad passenger car you must have a power ventilator. Command the power, and you can ventilate the darkest mine, or the most filthy hole. The true idea of ventilation is the admission and egress of air without creating drafts, or admitting dirt or cinders. I do not believe in taking air in at the top of the car. I have been in a car where the cinders and smoke would almost suffocate a person. There are times when the smoke hangs low and will enter a car through any unprotected opening. My present method is to take the air in low down. The chief end of an appliance is to accomplish the best results by the simplest means. I have been devoting my attention for the past year to the accomplishment of a system of heating which is to be combined with my present system of ventilating, and in connection with my heater, I am embodying some improvements over the Spear plan. I take the air through water, my heater (being somewhat like the Spear) is so combined with my ventilation system as to produce the most perfect results, and with this appliance a car will be perfectly pleasant. I am willing to apply it to a car, and if it does not succeed I will pay for the car A



series of pipes between the floors, with registers to admit this air, has been suggested.

Mr. J. N. LAUDER (Old Colony) preferred to discuss heating rather than ventilation. The heat should be distributed uniformly around the car. Our present systems of heating are doing pretty good service, and I know of no practical difficulties in the way of heating cars. We use the Johnson heater, and it keeps the cars in a comfortable condition and pleases the public.

Mr. PACKARD (New York Central) agreed with Mr. Lauder. He was experimenting to avoid the necessity of opening the windows in the summer, and thereby admitting dust and cinders. The combination of heating and ventilating is very seldom used at the present time.

Mr. F. D. ADAMS: We have made some progress in ventilation. There are about as many patent systems of ventilating as there are draw-bars, and some of them are entirely absurd. We use the Creamer exhaust ventilator, and admit the air just above the end window through Creamer's perforated plates, and we get good results from this combination. It is just as necessary to admit the air as it is to get it out. To be effective, deflectors should only be fitted to one of every five windows; if used on all windows dust and cinders will be freely admitted. The question is, however, the combination of heating and ventilating. Mr. Gouge has a system of warming and ventilating passenger cars, perhaps the only one combining the two principles. Mr. Creamer has a new system not yet in use, which, perhaps, may be successful. Colonel Mann has a system which takes the air in through water, cleaning the air from dust and cinders, and in his boudoir sleeping cars gives very good results. The windows in these cars are fitted solid\* to the car, but possibly in a passenger car, where the air is vitiated by a much greater number of persons, the system may not be as successful in obtaining good results; persons in ordinary passenger cars will not ride with windows fastened down in the summer. They will break them out if fastened down, and I believe that our present system is as good as any.

The Club then adjourned until Nov. 26.

### The Interchange of Cars at Buffalo.

This subject was discussed at an informal meeting of representatives of different railroads, held in Buffalo, on the 8th inst. In the absence of Mr. F. W. Wilder, Mr. McWood (Grand Trunk) took the chair. Among those present were: Messrs. J. D. McIlwain (Grand Trunk); R. H. Soule and F. W. Frederick (N. Y. West Shore & Buffalo); R. C. Blackall (Delaware & Hudson); L. Garey, E. Chamberlain, Peter Smith, (New York Central); C. H. Bowman (Pennsylvania & New York); Chas. Graham (Del. Lackawanna & Western); Robt. Potts (Canada So. Div. Michigan Cent.); John Kirby and A. C. Robsart (Lake Shore & Mich. So.); H. D. Titus (So. Central); J. W. Marden (Fitchburg); M. Wilder (N. Y. Lake Erie & Western); C. I. Butler (Fall Brook Coal Co.); A. Brewer (Troy & Boston); H. B. Crane; A. D. Wilder; Wm. Anderson; Thomas Rhodes; Osborne Sampson; S. W. Speer; Thos. Sills (Joint Inspector at Susquehanna Bridge); J. R. Petrie (Joint Inspector at Black Rock); and John S. Lentz (Lehigh Valley).

Mr. LENTZ suggested that "condition cards" be discussed.

Mr. KIRBY: The card itself does not authorize any party to make repairs called for by the card.

Mr. L. GAREY quoted Rule 6: A card may be affixed under the body of the car, for guidance of other inspectors, stating the defects with which the car will be received back, and when the car is so repaired the card shall be removed. Any company finding a car with card on it may make the repairs noted by card, and make bill for the same to the company putting on the card, the card to accompany the bill as voucher for the work done.

The CHAIR: Should I find such a card on a car I would make repairs and expect to get paid for the work.

Mr. GAREY: Cars are carded for old defects; the road thus carding them is not liable for such defects. It is therefore not a just claim for parties taking car in to make bill against company putting card on.

The CHAIR: That is simply to satisfy inspector receiving car that it is safe to run. I would certainly not do the work in that case, but would allow car to go home where it could be repaired.

Mr. GAREY: A Grand Trunk car going to Boston is received at Buffalo with cracked timbers; the Boston & Albany refuse it unless carded, and a road finding card on car makes repairs and sends bill to New York Central. That is not just.

The CHAIR: If the defects were old, certainly not.

Mr. MARDEN: A foreign car carded for old defects should be taken to its destination and then sent back. A car damaged while on the road is a very different thing, and should be paid for by the road putting the card on. I ask permission of foreign roads before repairing their cars.

The CHAIR: In loading agricultural implements and other bulky freight that was going a long way off our line, have occasionally seen it necessary in order to get the load in car to deface car in some manner, making it unfit for ordinary freight. This rule allows anybody to put it in proper condition to receive ordinary freight and charge same to party owning car.

Mr. GAREY: In order to get load in car belonging to this company in line service, if it is found necessary to deface cars, Line Manager would make settlement.

Mr. McILWAIN: The party doing defacing should settle with line.

Mr. POTTS: Let agent take up the case and collect from parties defacing car.

Mr. GAREY: Shippers sometimes make payment before work is done. Line Manager is immediately notified that a car has been defaced and so much money has been paid to cover damages. Car arrives at destination and Manager gives instructions to have car repaired.

The CHAIR: If it is an ordinary car, what then?

Mr. GAREY: It would be a car defaced by owners and made good by them.

The CHAIR: Then it would be chargeable to the party who put the card on it. The card on the car defaced states that owners will pay for repairs.

Mr. GAREY: The owners place cards on cars, but it is not intended that local cars shall be used for such service.

The CHAIR: It is impossible to keep "local cars" at home.

Mr. MARDEN: Traffic managers should have nothing to do with the settlement. If car is defaced in Boston for the purpose of loading merchandise car department is notified. If we collect payment and the car is repaired anywhere else, the car department arranges the proper charges. The car settlement should protect the road receiving the car, which is responsible only for new breakage.

The CHAIR: No car-builder would repair a car simply for the sake of doing the work; there is no money in it.

The discussion on this subject then closed.

### PHILADELPHIA & READING DRAW-GEAR.

Mr. PETRIE: We have experienced considerable trouble

\*The windows can be opened if desired, but the system of ventilation and cooling is designed to render open windows, which must admit dust, unnecessary.—EDITOR RAILROAD GAZETTE.

with P. & R. cars, owing to their weak draw attachments, especially when coupled with cars not equipped with dead-woods. The draw castings are bolted to the middle sills with  $\frac{1}{2}$ -in. bolts, except the four that go through the jaw straps, which are  $\frac{3}{4}$ -in. These castings, through shrinkage of the sills and ordinary wear of draw attachments, become loose and chafe, in a great measure weakening the sills, and in this way making them liable to break just back of the castings. Their followers were originally cast. The back one is now being substituted with wrought, which is an improvement, as far as they are concerned. At the same time, while the followers do not break the draw castings and sills have to suffer accordingly. The draw-heads also are defective where the shank goes through, and very often break.

The CHAIR: We have had a good deal of trouble with these parts of their cars, and have asked the Philadelphia & Reading to repair them.

Mr. KIRBY: The buffer spring is very short and light.

No representative of the Reading road was present.

### WHEEL GAUGE.

Mr. MARDEN wished to know the general practice as regards the limit of wheel gauges.

Mr. SOULE: Our established limit, 4 ft. 5  $\frac{1}{2}$  in., is being changed.

Mr. MARDEN: Owners of cars safe to run should be notified to conform to gauge. Inspectors should be given positive orders that cars under 4 ft. 5 in. between flanges or over 4 ft. 5  $\frac{1}{2}$  in. are unsafe.

Mr. KIRBY: Many cars are built for line service without any inspection.

After considerable discussion it was unanimously resolved that the roads interested be invited to send sample gauges to the next meeting.

### SIZE OF AXLES AT WHEEL FIT.

Mr. GAREY: Some roads will not receive any car with axles less than 4 in. dia. at wheel fit. Does any one present use such small axles?

No definite reply was made.

### REPORTS OF WHEEL CHANGES.

Mr. SOULE: Is the rule requiring each road to report to other roads all changes of wheels whether chargeable to that road or not, adhered to?

Mr. LENTZ: I strictly adhere to it.

Mr. KIRBY: If the fault is ours we do not report to owner of car.

The CHAIR: We report all changes.

Mr. LENTZ: We receive many short axles. If all changes were reported, it would prevent this.

Mr. KIRBY: Those doing that kind of work would not report it.

### COLLECTION OF BILLS FOR REPAIRS TO CARS OWNED BY PRIVATE PARTIES.

Mr. GAREY: Has any one had trouble in collecting bills for repairs to cars belonging to private parties as per Rule 19?

Mr. CHAS. GRAHAM: Some bills we sent out were not paid. The rule is seldom enforced.

Mr. GAREY: Why should railroad companies furnish brake shoes, journal bearings and other parts of cars that fail under fair usage free of cost to car-owners?

Mr. E. CHAMBERLAIN: Railroad companies do not receive the same compliment from them.

Mr. GRAHAM: They claim they should be treated the same as railroad companies, inasmuch as they send their cars out in good condition.

### RULE 20.

Mr. GAREY: Many roads have repudiated Rule 20. I opposed this rule at Saratoga, but submitted to the majority.

Mr. KIRBY stated that he opposed the resolution.

Mr. LENTZ: If you deliver a car on private track, who is responsible?

Mr. KIRBY: The Lake Shore & Michigan Southern, though we do not adhere to the rule.

Mr. MARDEN: Lake Shore should make settlement with parties doing switching service.

Mr. LENTZ: In case one of your cars should be side tracked, would you look to owner of side track for settlement in case car was destroyed?

Mr. KIRBY: We should look to the Lehigh Valley.

Mr. MARDEN: Would we be considered a private line in handling that car? It is a question which could only be settled by law.

Mr. LENTZ: Do they get any freight for handling those cars from point of loading to your road?

Mr. KIRBY: Sometimes they do.

Mr. McILWAIN: The last line in carrying freight receives a pro rata of that.

Mr. KIRBY: The last company to whom you deliver car is responsible.

Mr. BLACKALL: It would be a question of law.

### ORGANIZATION OF CLUB.

It was resolved not to form a permanent organization but to continue the present informal meetings every two months during the fall and winter. The following officers were elected for the ensuing year: Mr. Wm. McWood, President; Mr. John Kirby, Vice-President; T. W. Frederick, Secretary. The meeting then adjourned till the second Wednesday in January, 1885, at 10 a. m., at the Tiff House, Buffalo, N. Y.

### Southern Railway and Steamship Association.

The annual report of the General Commissioner, as presented to the association at its annual convention, includes tables showing the business done at the various points covered by the association, with the movement of merchandise and cotton, the tables being too long for reproduction. The balance of the report is as follows:

The information contained in the tables showing merchandise and cotton business is very valuable, showing the value of the comparative business at important points.

It is gratifying to be able to state that all balances, accounts, etc., have been paid in full from date of the establishment of the General Commissioner's deposit plan, August, 1877, to date of last account, rendered July 31, 1884.

The table on page 1193 shows, at points where reports were made for the whole of both years, a decrease in merchandise of 11,653 tons, or 15.8 per cent., and in revenue \$227,771, or 20.93 per cent.

The table on page 1207 shows a decrease in cotton of 113,899 bales, or 14.6 per cent., and in revenue, \$178,566 or 17.5 per cent. The two tables show a net loss to the transportation companies of \$406,337, or 19.3 per cent., as compared with 1882 and 1883.

The loss on cotton is owing principally to a short crop. The loss on merchandise is, to a large extent, caused by the non-pooling of inferior Eastern business this year that was pooled last, and to a reduction in rates. If all merchandise that was pooled last year had been pooled this, and the same rates maintained, the loss would have been slight.

Rates have been very well maintained during the past

year, but some complaint has been made as to maintenance of cotton rates, particularly as to shipment of through cotton on combination of local rates, and as to repayment to shippers of compress fee by ships at the ports.

I respectfully, but urgently, again call your attention to changes in the agreement recommended in my last annual report, as follows:

"I advise that Section 18 be changed, and that cotton and all other business be pooled on the basis of revenue instead of in bales or tonnage, with payment of excess as now in 80 per cent. of the revenue received. It will make but little difference in revenue to the different lines, and balances are more accurately made up. The present method of assessing balances on excess is very unsatisfactory, and, to some extent, uncertain as to accuracy in detail. I am not sure that any method of working out the detail is absolutely correct, and believe results of division in revenue will work out in detail much more certainly as to amounts due each, than the present bale or tonnage pool.

"The latter part of Section 19, giving to the roads or lines the allotment of business, they to determine the subdivisions, without appeal, leaves the connections of the terminal lines or roads, if they do not receive satisfactory allotments of business, without interest in the maintenance of rates, which is the foundation of our organization. I suggest, therefore, that where satisfactory allotments are not made by initial or terminal lines to these connections, that the question of subdivision be referred to arbitration. The Rule 11 in old agreement, making all allotments to lines, and not initial roads, was much more satisfactory than the present rule.

"I would again urge upon all the importance of pooling all competitive business as the only method of maintaining just and reasonable rates, and, also, again call the attention of members to the importance of taking some action in relation to the compressing of cotton at interior competitive points."

If some arrangement could be arrived at whereby the compress fee could be saved to the transportation companies, a large amount of money would be saved to them instead of given to shippers. There is no reason why the charge paid by the transportation lines for compressing cotton for their benefit in carrying should not be collected back by them instead of by the shippers, from the vessels; except that the officers of each line hesitate to take the initiative in withholding this rebate from the shippers, for fear their competitors will use it against them to get the business.

This should not be so. All should do what they believe right; and, in adjusting these questions, should bear alike the burden of any dissatisfaction that might arise from the adoption of equitable regulations to be used by transportation companies.

I recommend some changes to be made in the rules governing the Board of Arbitration; the fullest information should be given the Board in all cases. The present method of presenting arguments, and exchanging same, and allowing rebuttal, is very well as far as it goes, but does not go far enough. The original arguments frequently merely state the case, in as few words as practicable, and the full argument is made in the rebuttal, which the opposite party has no opportunity to reply to, explain, or controvert. I would recommend that each party have the privilege of being heard before the Board, before a final decision; at least, that the Board be authorized to call for explanations when conflicting statements are made, or when they do not clearly understand the case from the arguments submitted. It is certainly important that the judges should understand, very thoroughly, the law and facts in all cases before making a decision. I have no doubt that more satisfaction would be given in the decisions of the Board, if it was known to each party that the arbitrators had all the facts before them, and understood the cases fully before deciding. They should have the right to review these decisions for reasons satisfactory to them.

### PASSENGER BUSINESS.

I recommend that steps be taken looking to the pooling of passenger business. It is positively asserted that there is less reliance to be placed in agreements concerning passenger rates than has ever been in the freight business.

There is no doubt that a large amount of revenue from this business is thrown away, which can be saved by pooling the business.

### CLAIMS.

The Claim Department has done a large amount of work the past year. More than 18,000 claims have passed through the hands of the claim agents; about 11,000 of these were paid claims and vouchers for the proportions due by each road made, and the claims distributed. About 7,000 were investigated, or are in course of investigation, and when paid, divided and distributed.

This work is performed for the benefit of all interested and should be paid for by all, but it is done at the expense of a few roads in South Carolina, Georgia and Alabama. The large systems in the West and Northwest, as much interested as the roads bearing the expense, pay nothing. This is not as it should be; they are saved, in the examination and distribution of these claims, as much as the delivering roads, where claims usually arise. Again, the laws of Georgia, and possibly other states, require that transportation companies shall protect the bills of lading issued by their connections, with whom they work through rates, and the delivering roads have to pay all overcharges, on presentation of claims, with proper evidence of the overcharges. These claims, as well as others, are frequently held up at the cost of delivering roads north of the Ohio River to pay them. These, from delay and careless handling, are frequently lost, and papers have to be duplicated by this office.

The Claim Department is one of the most important connected with the freight interest of transportation companies. A thoroughly organized Claim Department, by any long through line or lines, with prompt investigation and settlement of claims, will do more to secure business than any other thing connected with the transportation business, not excepting dispatch. The two together will always secure the business over slow time and speedy settlements of claims, or over fast time and tardy settlement of claims.

I ask, then, in justice, that all roads interested pay in proportion to work done for them in this office, and not as formerly, in proportion to revenue. This will make it light on each, and in justice should be done.

Respectfully submitted, VIRGIL POWERS, General Commissioner.

### INSURED BILLS OF LADING.

The following is the decision and award made by Messrs. John Screven and Thomas H. Carter, Arbitrators, in the matter of the issue of insured bills of lading by the Charleston line, informally submitted to them in Atlanta, Oct. 14:

The question submitted for the decision of the Arbitrators as presented by the General Manager of the South Carolina Railway Co., is: "Whether the 20th section of the existing Agreement of the Southern Railway & Steamship Association permits one combined rail-and-water line competing,



with another rail-and-water line, to issue insured bills of lading covering all the marine risks incident to such routes, in order to overcome any disadvantage that might exist, on account of increased rate of insurance demanded by insurance companies."

The first clause of the 20th section of the Agreement recites that: "When by reason of any actual difference in the rate or premium of insurance against marine risks, any line is at a disadvantage in competing with any other water, or combined rail-and-water line, such disadvantage may be avoided by an arrangement with the insurance companies, individually or collectively, by which the transportation line can assume or pay the difference between the rate or premium of insurance by their own line, and that by the lines of their competitors, and thus secure to shippers the same premium or rate of insurance by all lines."

It is obvious that this clause, as indeed the whole of the 20th section, is intended to establish a rule for the equalization of competition between specified parties where marine risks are involved, and the parties specified may be either water or combined rail-and-water lines.

In the case before the arbitrators, both competitors are combined rail-and-water lines. Both parties, as such, are strictly within the limitation of the above recited clause, and either is at liberty to assume or pay the difference, if any there may be, of marine insurance operating to its disadvantage.

But are the parties in this case at liberty to issue insured bills of lading? On this point, the clause of the 20th section applying to them is wholly silent. The reason for this is not apparent, nor is it essential to a strict construction of this clause, but the silence of the rule on this point seems to assume decisive significance when the second or succeeding clause of the 20th section is considered.

This recites that: "In case of competition between all rail lines and water or combined rail-and-water lines, the latter may assume the whole of the premium or rates for insurance against marine risks, and bills of lading to this effect may be issued."

In short, insured bills of lading are specially allowed to water or combined rail-and-water lines in competition with all rail lines only, and as the expression of the rule distinctively applies to them, and is silent as to extending the same privilege to water or to combined rail-and-water lines in competition, the Arbitrators are constrained to decide that the latter are excluded from the privilege.

In arriving at this conclusion, the Arbitrators do not deem it necessary to consider whether this distinction was intended by the framers of the Agreement, but they hold it unwise to depart from a strict construction of any part of the Agreement which may admit of doubt, or which, as in this case, is the subject of actual controversy, and which may be promptly and permanently settled by the action of the Association.

#### TECHNICAL.

##### Locomotive Building.

The Philadelphia & Reading shops in Reading, Pa., recently turned out the first of four heavy passenger engines intended to run on the Bound Brook line between New York and Philadelphia. These engines have 21 by 23 in. cylinders and driving wheels 68½ in. diameter. The truck wheels are 33 in. The boilers are 26 ft. 10½ in. over all, and have Wooten fire-boxes 9 ft. 6 in. by 8 ft. inside. The outside fire-box casing is 10 ft. 4½ in. by 8 ft. 8½ in. The tender tanks will hold 3,500 gallons of water.

The Dickson Manufacturing Co. in Scranton, Pa., has just completed a locomotive for the Chicago, Fairchild & Eau Claire River road in Wisconsin.

##### Car Notes.

The Southern Car Works in Knoxville, Tenn., are building a large number of box cars for the East Tennessee, Virginia & Georgia road.

The Ontario Car Works in London, Ont., are building 125 box cars for the Northern & Northwestern road.

The Barney & Smith Manufacturing Co. in Dayton, O., recently delivered 6 passenger cars, 1 mail and smoking and 2 baggage and express cars to the new Columbus & Cincinnati Midland road.

##### Bridge Notes.

The Phoenix Bridge Co. at Phoenixville, Pa., this week completed a new iron highway bridge over the Delaware River at Trenton, N. J., to replace the old wooden bridge which was destroyed by fire last June. The new bridge has seven spans of 160 ft. each. The roadway is 20 ft. wide and there is one footwalk at the side.

The Paterson (N. J.) Press of Oct. 27 says: "The Passaic Rolling Mill Co. is at present busy with the erection of another important addition to this already extensive establishment. The new building is being erected on the west side of the tract of land owned by the company, and will be 170 by 80 ft. in size. The foundations were laid some time ago and the work of constructing the building has progressed as far as putting the windows in place. The building is being built of brown stone and the roof is to be of iron. With the exception of the window-frames the building will be entirely fire-proof. The building is being erected not so much for the purpose of increasing the product of the rolling mill as for the purpose of systematizing and facilitating the work and making it more pleasant for the men employed. The blacksmiths' forges are to be put into the new building and a number of the hammerers are also to find room there. The mill in which the rolling and puddling is being done at present is then to be connected by a brick addition to the rear mill. A wooden building, which at present occupies the space between the new and the rear mills, is being taken down. This will decrease the risk of fire in the establishment, and will conduce greatly to making the work more pleasant for the employes. The latter have frequently complained of the excessive heat in the portion of the building now devoted to furnaces, and the cold air blasts which Mr. Cooke procured by an arrangement adopted some time ago did not work as satisfactorily as might have been expected. By the new arrangement there will be ventilation through the whole establishment from north to south. In addition to this it will facilitate the work of making large beams for bridges. Some time ago the largest girders for bridges did not exceed 20 or 30 ft., but at the present day girders of 50 ft. are nothing uncommon. The space in the rolling mill is now large enough for girders 40 or 45 ft., and it is very inconvenient to make girders longer than that. By the new arrangement there will be plenty of room for the longest kind of girders. The work of erecting the new building is being done at present, as things are very dull."

##### Iron Notes.

The Bethlehem Iron Co. at Bethlehem, Pa., has contracted to furnish the Lehigh Valley Railroad with 10,000 tons of steel rails, to be delivered in the winter and spring. The price is \$27 per ton at mill.

The St. Louis Malleable Iron Co. has resumed operations in all departments. Arrangements have been made by which the temporary receivership is ended and the works are restored to the company.

The Helmbacher Forge & Rolling Mill Co. in St. Louis is

running only one furnace, the bar mill and the car-link and pin machinery.

The rolling mill of the Abbott Iron Co., at Canton (Baltimore), shut down Oct. 4. At the annual meeting the stockholders voted not to resume work at present.

The new Maumee Rolling Mills at Toledo, O., were successfully tested last week. The real estate of the company embraces 60 acres, with a river frontage of 1,600 ft. There are eight buildings, the largest being 300 by 385 ft. The plate mill is capable of rolling the largest plates used in America. The fly-wheel of the engine which drives this department is 35 ft. in diameter and weighs 58 tons.

The Lowmoor Iron Co. will put its large furnace at Lowmoor, Va., in blast shortly. The company will soon begin work on a second furnace near the present one.

#### Manufacturing and Business Notes.

The partnership existing between J. G. Hendrickson, F. J. Clamer and Frank Bushnell, under the name of the Ajax Metal Co., was dissolved Oct. 27, by mutual consent. Either J. G. Hendrickson or F. J. Clamer will sign in liquidation, and all money due the firm should be made payable to their order. The Ajax Metal Co. will be reorganized and incorporated under the laws of Pennsylvania. All orders for Ajax metal will receive prompt attention at the office in Philadelphia.

The Harlan & Hollingsworth Co. in Wilmington, Del., is building for the New York, Philadelphia & Norfolk Co. a large iron transfer steamer to run between Cape Charles City and Norfolk, Va. The steamer will have tracks for cars on deck, and will also be provided with cabin accommodations for passengers. The same company is also building for the road a powerful tug, which will be used to tow barges and car-floats.

The Falls Rivet Co., in Cuyahoga Falls, O., has undertaken the manufacture of the Fulton steel pulley and hangers.

The Wilkes-Barre (Pa.) Wire Rope Works recently supplied the Delaware & Hudson Canal Co.'s No. 5 colliery at Plymouth, Pa., with a 1½-in. wire cable 2,100 ft. long.

#### Fast Time.

The St. John (N. B.) Telegraph of Oct. 24 says: "The train which conveyed His Excellency the Governor General and party to Fredericton, probably eclipsed all previous authentic records of traveling by rail in this Province. The trip up was made in 1h. 55m., including stops, or 1h. 30m. actual running time for the 66 miles. But it must be remembered that considerable time is lost in rounding the heavy grades at Bay Shore, and that it is impossible to make record time over some portions of the Fredericton Branch. Between Fairville and Welsford the train went like the wind, making the 21 miles in 22 minutes; the 11-mile stretch to Westfield occupying 12 minutes; the 10-mile run to Welsford only 10 minutes, or at the rate of 60 miles an hour. The Flying Yankee's time for the same distance is 32 minutes. Coming down yesterday it was expected that the record would be broken, but three stops had to be made, and the time was exactly the same as before, 1h. 55m. Fifteen minutes more were consumed coming over the Fredericton Branch, so that the speed attained for the remainder of the distance was really faster than the day before, and for several miles after leaving Clarendon the train was going at the rate of about 62 miles an hour."

#### A Cantilever Bridge on the Canadian Pacific.

The London Engineering says of the cantilever bridge of the Canadian Pacific over the Fraser River:

"This would have been the first bridge on this principle erected in America had it not been for the very long time that was occupied in bringing the iron work across the Atlantic, the vessel occupying within two days of six months on the voyage, during which time the Canada Southern bridge across the Niagara was ordered, built and opened for traffic. The span of the Fraser River bridge, from centre to centre of the cantilevers, is 315 ft. The two levers are each 210 ft. long, and they carry between them a girder 105 ft., so that from the anchorage at each end the truss support is 525 ft. The centre of each cantilever is carried by a stone pier 72 ft. high from the rocks on the river bank, and the outer end of the levers are held in position by an anchorage in the abutment founded on the solid rock of the river bank. All the pins, links, centres and the lower chords of the cantilevers are of Siemens-Martin steel, whilst the other parts of the truss are the best refined iron. The bedplates and anchorages are of cast-iron, the weight of the whole being 243,000 pounds of cast iron, or about 546 tons altogether. The strains are calculated to carry a train the full length of the bridge, weighing 2,500 pounds to the foot run in length, with two locomotives at the head, each weighing 55,000 pounds, on three pairs of drivers not over 14 ft. wheel base in addition. The wind strain is calculated for the full surface of both trusses and a train showing a side exposure of 10 ft. in height and the full length of the bridge."

#### A New Electric Street Railroad.

Simultaneous experiments with cable railroads operated by steam power and electrical railroads naturally suggested to many inventors a combination of the two systems. The central underground tube is made to carry a fixed electrical conductor instead of a moving wire rope, and connection is made between the motor and the conductor through the slit in the tube. An electric railway on this principle has been built for experimental purposes at Manchester, England, and is said to work satisfactorily, even in rainy weather. The improved contact due to moisture is supposed to make up for the loss by leakage. In this system the running rails of the road are used as return conductors. Leather straps are used to draw the conductor through the tube. They serve to clear the passage way of ordinary obstructions, and if they should meet with too much resistance, would give way, breaking the connection and stopping the car before much damage was done. The straps can be easily and cheaply replaced.

#### Grade Crossing Accidents.

The Massachusetts Railroad Commissioners have given the following decision:

"The fatal accident of Oct. 11, on the Troy & Greenfield Railroad, was investigated by the Board on Oct. 16, when a view of the premises was taken and many witnesses were examined. George and Agnes Hall, while driving across Greylock western crossing, were instantly killed by a passenger train of the Boston, Hoosac Tunnel & Western Railway Co. All the testimony showed that employes of the operating road were without fault. The proper warning signals were given. The speed was only such as was necessary to make schedule time and to carry on the traffic of the road. There was no time to check the train. The sad casualty was a natural incident of travel where such crossings exist; and the engineer of this very train has twice before witnessed narrow escapes from like disasters. The crossing is peculiarly dangerous, being a diagonal one, on a very steep grade, with small opportunity to see the track. To persons crossing, as these were, from the south, it is especially hazardous, because they come over a covered

bridge 60 or 70 ft. from the crossing, and while driving over the bridge they can neither see nor hear an approaching train. A steep bank, with a barrier partly removed, adds at this time to the perils of the spot. Neither this Board nor the county commissioners can direct the placing of a flagman or of a gate on the state railroad; but, on our suggestion, the Acting Manager at once stationed a flagman at this crossing, and we have no doubt he will be kept there (as he should be) until a more radical remedy can be applied. This can be done by discontinuing the town-way, which is exceedingly dangerous, and which is said to be needless. A project has been pending for some time which would effect this, and which would also abolish the crossing by changing the direction of the highway. This measure would, at moderate cost, remove two sources of danger. The Manager of the Troy & Greenfield Railroad would no doubt co-operate with the town in this excellent movement. It is greatly to be desired that on this, and on every other railroad, measures of precaution should be more generally adopted by the placing of flagmen or gates at dangerous crossings, or, better still, by the separation of grades, without waiting for fatal accidents to call attention to this duty."

#### Large Machine Tools.

William B. Bement & Son, of Philadelphia, are building a punching and shearing machine for the Keystone Bridge Company which will punch a 4-in. hole in 1½-in. iron, 3 ft. from the edge. The frame of the machine weighs 23 tons, and is 10 ft. high, the eccentric shaft being 18 in. diameter. Shearing blades of different shapes and punches of different sizes can be used. The machine will make 16 cuts per minute. This firm are also building a punching machine for the Miltimore Car Wheel Co., to punch the arm of their car wheel out of flat bars of steel 1 in. thick. This machine will punch a 5-in. hole in 1-in. iron. The frame weighs 15 tons. Patterns are now also being made in the Bement shops for a lathe which will be capable of turning a shaft 53 ft. long. The lathe is 70 ft. in length, swings 60 in., will be double-headed and triple-g geared. Weight about 50 tons. —American Machinist.

#### THE SCRAP HEAP.

##### A Collision with a House.

A dispatch from St. Louis, Oct. 25, says: "One of the funniest railroad accidents that ever happened occurred to a special on the Missouri Pacific last night. The special train runs only every Friday night, and is operated to give the residents of Kirkwood and nearer stations an opportunity to visit the theatres or other night attractions in the city. Last evening the special left the Union Depot at 11:30 with a very good load of passengers, the various conventions now being held in the city, especially that of the W. C. T. U., having been well attended by Kirkwood people. The train moved along through the yards carefully and was just beginning to strike its regular gait when the passengers were startled by a sudden halt which threw everybody forward with great force and created the greatest consternation. Visions of a disastrous collision flashed before the eyes of the passengers, who waited for death to come the first few seconds, and then concluded to run out and ascertain the cause of the shock. The most active men got out first, and when they cast their eyes around they thought they had encountered a cyclone. The remains of a two-story frame house were strewn about the track and over the forward cars. A number of people in very abbreviated garments and scared-to-death expressions of countenance stood around shivering in the cold, while a flagman called out lustily for a red light. After a great deal of excitement and much conjecture as to how in the name of all that was wonderful a frame house could have competed for right of way with a locomotive, it was learned that an enterprising house-mover had undertaken to change the location of a house during the hours of the night in which he calculated there would be no travel. He had taken the precaution of carefully studying the time-card and ascertaining that no regular train would be along at that hour. But to make sure that no accident would occur, he bribed the flagman with a bottle of 'Robinson County' to go down the track about 100 yards and flag any train that might appear. The house-mover then began his work, and so sure was he of its successful accomplishment that he permitted the family that occupied the house to go to bed unwarned. In addition to the family, which consisted of Wm. Nixon, his wife, two children and a servant, there were six boarders in the house. Before getting the mansion on the track where an engine could strike it amidstships, the mover, whose name is John Lloyd, found a difficulty in the matter of telegraph wires. This problem was solved by cutting the wires. Then he got the house on the track. His friend with the red lantern, had, in the meantime, gone down the track and become so intimate with the contents of the bottle that he couldn't tell a locomotive from a Congressman, and then the Kirkwood train came along. The engineer didn't see the house in time, and unfortunately the rays of the headlight did not flash upon the form of the house-mover, who danced a delirious jig in the middle of Chouteau avenue, wildly crying out to the engineer. The result was that the engine lifted the house up into the air and juggled it for a while, and then threw it backward like a handful of leaves. The occupants, strange to say, scrambled out of the ruins unhurt and undressed. The flagman had lost his lantern and the headlight of the locomotive having been destroyed, the place was in entire darkness for a while. The mover was clamorous for the safety of his rollers. It was 5 o'clock this morning before everything had been cleared away."

##### Railroad Young Men's Christian Association.

The Forty-seventh street branch of the Association in Chicago reports for the month of September a total attendance of 1,875 at the rooms. There were 294 baths taken, and other conveniences of the rooms were fully used. The attendants at religious meetings numbered 282. There were 17 new members received. There were 115 visits made to sick members, families, etc., and 1,272 papers were distributed. A call is made for new members for this branch, and railroad men are asked to take more advantage of the opportunities offered them.

##### The Farmer's Private Station.

"We made a singular discovery the other day," remarked an official of a road running into Chicago. "About three miles beyond a certain station on our line there is a farmhouse by the side of the track. Just beyond the farm-house is a little creek, over which there is a small bridge. About four years ago some repairs were made to that little bridge, and, of course, the bridge gang had to put up a sign board 'Run slow' on either side during the day or so the bridge was weakened. When they had finished their work they went off and forgot the signs. The fact is, the boards had disappeared, and they didn't take the trouble to hunt them up."

"Some weeks afterward, no one knows just when, those signs reappeared in their former places. Nobody knew who put them there and what for. Nobody cared. If the section-men noticed them at all they thought the bridge-men had done it. It was none of the engineers' business why they were there—it was their duty to observe regulations,



which required them to slow down at all such signs. Observe regulations they did. For about four years not a train had passed over the little bridge without slowing almost to a standstill. The culvert, for that's all it is, has been as safe as any part of the road-bed, and yet stopping and starting trains there has cost this company thousands of dollars. You know it costs money to stop and start trains. "You are wondering how it all comes about, of course. Well, that farmer stole those boards and put them up again at his leisure. For four years he has been going into the town or coming from it on our trains, getting on or off right at his own door. It was a slick scheme, and how he must have laughed at us and enjoyed it all the while. But his game is up now, and the engineers are having their revenge by keeping up an infernal screeching of their whistles at all hours of the day or night whenever they pass the farmhouse."—*Chicago Herald*.

#### A Convenient Accident.

"I see a mail car was burned on the Omaha road night before last, and all its contents destroyed."  
"You don't tell me! Where was it bound?"  
"Going north to Ashland and Bayfield, Wis."  
"To Bayfield? Good, good!"  
"Good? What on earth is there good about it?"  
"Why, you see, I owe a man in Bayfield a little amount, and I've promised to send it to him till he won't take promises any longer."  
"What's that got to do with it?"  
"Everything, everything. I'll go right off now and write asking him why in tunket he doesn't send a receipt for that money that I sent him last—last—What day did you say that mail car was burned?"—*Chicago News*.

#### A Hardware Sto'.

At the restaurant at Pensacola Junction: Last spring while I was on my way to the "Mardi Gras" we stopped there for dinner. A gentleman desired to take a cup of tea into the train for a sick lady. "No!" yelled the proprietor, "you can't take no cups out o' yere."  
"But it is for a lady who is too ill to come in."  
"Don't make no difference," was the reply; "no cups kin go out o' yere."  
"I'll pay you for one," persisted the gentleman, producing a dollar bill.  
"We don't sell cups," was the sneering answer. "D'ye think we keep a hardware sto'?"  
"Judging from this," said the man who balanced one of the doughy sandwiches in his hand and looked at it critically, "I should suppose you did!"  
The passengers set up a mighty shout of laughter and approval, but nevertheless the man did not get off with the cup of tea and the invalid lady's thirst remained unquenched.—*Baltimore Southern Manufacturer*.

#### What He Was.

"Sir, I demand your daughter's hand in marriage," boldly said the gifted young man to the great billionaire. "I do not ask it as a favor from you. We love one another. That is sufficient. I am her equal in every respect."  
"Ah," exclaimed the billionaire, "are you a plumber?"  
"No, sir!" proudly responded the valiant suitor.  
"A bank cashier with an unexhausted shortage?"  
"No, sir?"  
"A coachman?"  
"I am not!" and his lip curled, proud in disdain.  
"You are not a base ball pitcher with a rifle twist, that you thus imperiously ask for the hand of one who will inherit millions?"  
"No, sir. I am the inventor and patentee of an automatic car coupler!"  
"Take her, take her!" cried the billionaire. "All I demand in return is that in no idle moment you decide to pay the national debt."—*Pittsburgh Chronicle Telegraph*.

#### It Was the Cat.

There are innumerable cats in the underground railroads of London. No one has ever seen one of them without its tail was cut off, showing its narrow escape from the thousands of passing trains.—*Coach Painter*.

#### The Maniac Brakeman.

On Thursday morning last as the freight train of Conductor P. D. Moran, which runs from Sioux City to Eden, D. T., was leaving Oak Point going north, a young man climbed upon the top of the box car of the moving train. He wore neither coat nor shoes, had pieces of old flour sacks tied around his feet, and a generally wild appearance. After the train had got under full headway he ran along the top of the train and began vigorously to set the brakes. Brakeman E. P. Reader ran after him, and reached him just as he had set four brakes. Reader asked the man if he wished to stop the train, to which he replied "No."  
"Where are you going?"  
"To Sioux Falls."  
"Have you a ticket?"  
"No."  
"Well, you had better see the conductor and get one."

At this suggestion the man ran swiftly toward the front of the train, at one place jumping from the top of a box car to the centre of an empty flat car, and falling down. He climbed over the tender, jumped on the top of the engine cab, and standing erect, waved his hands about him. He was finally shoved by the brakeman from the train at Westfield. From this place he evidently walked a distance of 19 miles to Calliope, and there climbed into an empty box car. As the same train came south on Thursday afternoon it took this empty car from Calliope to Elk Point, where, in putting out the car, the brakeman again recognized their strange visitor and turned him over to the Sheriff of Union County, and, as is understood, he was put in jail. Last night, as a passenger on the train tells a reporter, when the same train was stopping at Elk Point on its way to Sioux City, some one uncoupled the caboose and one car from the train. There being a down grade back, they ran for a long distance back upon the track. After this runaway part of the train was caught and coupled, and the train had pulled out for Sioux City, Brakeman George Houtz observed the same man who had acted so oddly on the top of the moving train again engaged in setting brakes. Houtz caught the man, got him down on top of the car, and tried to hold him. Finding the job was going to be too much for him, he sent young Reader to the end of the train for Brakeman Fred Smith. Just as Smith and Reader reached the scene the crazy man nearly succeeded in throwing Houtz off the roof of the box-car. The three trainmen had great difficulty in keeping the fellow on the top of the car until the train reached Jefferson, where they had a scuffle with him and got him off just as the train pulled out of the place.

He is evidently a railroad brakeman, and is crazy. He climbed upon and ran along the cars like an expert, and each time the whistle blew while the trainmen were holding him he struggled hard to get up, and muttered that he must set the brakes. He is a man of perhaps 25 years of age,

light complexion, rather slender, and about 5 ft. 8 in. in height. He has whiskers of several weeks' growth, and a wild and excited appearance. No one can explain where he came from, and why he haunts this particular freight train is what the men on Conductor Moran's freight train cannot tell.—*Sioux City (Ia.) Journal*.

#### A B C and D E F.

A gentleman traveling in a railway carriage and endeavoring with considerable earnestness to impress some argument upon a fellow traveler who was seated opposite to him, and who appeared rather dull of apprehension. At length, being slightly irritated, he exclaimed in a louder tone, "Why, sir, it's as plain as A B C!" "That may be," quietly replied the other, "but I am D E F!"—*Railway Express*.

#### A Boy Train Wrecker.

A dispatch from Fitchburg, Mass., Oct. 28, says: "An attempt to wreck the accommodation train which left Fitchburg at 12.15 o'clock p. m. to-day was made at a sharp curve one mile east of Lunenburg station, on the Fitchburg Railroad, by placing stones and a rail on the track. The obstructions were again placed on the track after the train had passed. Station Agent Anderson of Fitchburg and a Boston detective scoured the woods, and about a mile from the place found Norman Jones, of Shirley, 12 years old, whom they placed under arrest. Jones says he did it for fun. He appears to be a victim of dime novels, as he carries a hatchet and long knife in his belt and uses considerable slang."

### General Railroad News.

#### MEETINGS AND ANNOUNCEMENTS.

##### Meetings.

Meetings of the stockholders of railroad companies will be held as follows:  
Baltimore & Ohio, annual meeting, at the company's office in Baltimore, Nov. 17, at 10 a. m. Transfer books close Nov. 6.  
East Tennessee, Virginia & Georgia, annual meeting, at the office in Knoxville, Tenn., Nov. 12.  
Louisville, New Orleans & Texas, special meeting, in Memphis, Tenn., Nov. 10.  
Memphis & Charleston, annual meeting, in Huntsville, Ala., Nov. 13.  
New York, Lake Erie & Western, annual meeting, at the office in New York, Nov. 25.  
Philadelphia & Reading, annual meeting, at the office in Philadelphia, Jan. 13, 1885. The registry of stock closed Oct. 12.  
Rochester & Pittsburgh, annual meeting, at the office, No. 20 Nassau street, New York, Nov. 12.

##### Dividends.

Dividends on the capital stocks of railroad companies have been declared as follows:  
Manchester & Lawrence, 5 per cent., semi-annual, payable Nov. 1, to stockholders of record Oct. 25.  
Oregon Railway & Navigation Co., 1½ per cent., quarterly, payable Nov. 1, to stockholders of record Oct. 21.

##### Railroad and Technical Conventions.

Meetings and conventions of railroad associations and technical societies will be held as follows:  
The American Society of Mechanical Engineers will hold its fifth annual meeting in the city of New York, beginning on Wednesday, Nov. 5.  
The Western Association of General Passenger & Ticket Agents will hold its next regular meeting at the Paxton Hotel in Omaha, Neb., on Wednesday, Nov. 12.  
The Master Car-Builders' Club will hold regular meetings at its rooms, No. 113 Liberty street, New York, on the evening of the third Thursday in each month. The next regular meeting will be on Thursday, Nov. 20. Subject for discussion: Freight Car Couplings.  
The New England Railroad Club will hold its regular meetings at its rooms in the Boston & Albany station in Boston, on the evening of the fourth Wednesday in each month.  
The Western Railway Club will hold regular meetings at its rooms, No. 103 Adams street, Chicago, on the third Wednesday in each month.

##### Foreclosure Sales.

The Annapolis & Elkridge road was to have been sold in Baltimore, Oct. 23, by the trustees under the mortgage, but the sale was postponed until Dec. 18 next, subject to the further right of adjournment. The postponement was made on account of an injunction issued by the Circuit Court of Anne Arundel County, on application of the Attorney-General of Maryland, acting for the state, which is a large stockholder in the road.

##### Mail Service Extensions.

Mail service has been ordered over new railroad lines as follows:  
Marquette, Houghton & Ontonagon, service extended from L'Anse, Mich., to Houghton, 31 miles.

##### Order of Railway Conductors.

The Grand Division of the Order of Railway Conductors ended its annual session in Boston, Oct. 27, by the election of officers and the transaction of other routine business. It was decided to hold the next convention in Louisville, Ky.  
On Oct. 26 the delegates, on invitation of the Old Colony Railroad Co., took a trip to Plymouth, visiting the points of historic interest in that town.

##### American Society of Mechanical Engineers.

The fifth annual meeting of this Society will be held in New York city, beginning on Wednesday, Nov. 5. The following programme has been published:

Wednesday, Nov. 5.—Evening, business meeting and session for reading of papers.  
Thursday, Nov. 6.—Morning and afternoon, sessions for reading of papers and discussion. Evening, visit to the American Institute Fair.

Friday, Nov. 7.—Morning, excursion to Paterson, N. J., where the Rogers, the Cooke and the Grant locomotive works, the Passaic Rolling Mill and a silk mill will be visited. Afternoon, visit to the Stevens Institute of Technology in Hoboken, N. J. Evening, business meeting.

Among the papers to be presented at this meeting are the following: W. F. Durfee, "The Experimental Steel-Works at Wyandotte;" R. W. Hunt, "The Original Bessemer Steel Plant at Troy;" A. C. Hobbs, "Locks and their Failings;" William Hewitt, "A Novel Form of Hammer Die;" F. A. Scheffler, "New Method of Constructing a Horizontal Tubular Boiler;" T. D. West, "Sound Castings;" C. J. H. Woodbury, "Measurements of Friction;" R. H. Thurston, "On the Sliding Friction of Rotation;" F. W. Halsey, "A New Rock-Drill;" William Kent, "Factors of Evaporation for Use in Tests of Steam-Boilers;" J. M. Ordway, "Experiments on Non-Conducting Coverings for Steam-Pipes."

#### Western Society of Engineers.

The 196th meeting was held in Chicago, Oct. 21, Vice-President Wright in the chair. The minutes of the preceding meeting were read and approved.

The Secretary read a letter from the St. Louis Engineers' Club urging this society to remain a member of the Association of Engineering Societies.

The Secretary also read a letter, addressed to the President, from Mr. J. F. Holloway, President of the Civil Engineers' Club of Cleveland, requesting the society to reconsider its action of withdrawal from the Association and enclosing a series of resolutions to the same effect adopted by the Club.

It was voted that these communications be received and placed on file.

After discussion of the subject matter of these communications the following preamble and resolutions were adopted:

"Whereas, Since the vote to withdraw from the Association of Engineering Societies, it is believed that many members who then favored withdrawal have changed their views; and

"Whereas, The other participating societies have urgently requested us to retain our membership.

"Resolved, That members are hereby requested to present written opinions on the question of remaining a member of the Association and that at some meeting not earlier than Dec. 2 a vote be taken on this question."

The paper by Mr. Wright on "Street Railway Joints," published in the *Journal* for September, was taken up for discussion, after which the meeting adjourned.

#### ELECTIONS AND APPOINTMENTS.

Canadian Pacific.—Mr. Edward Holloway has been appointed General Foreign Freight Agent, with office in Montreal.

Central Massachusetts.—At the annual meeting in Boston, Oct. 29, the following directors were chosen: Samuel H. Aldrich, Marlboro, Mass.; Lyman Hollingsworth, Cohasset, Mass.; J. Edwin Smith, Worcester, Mass.; Elisha S. Converse, Malden, Mass.; Wm. M. Gaylord, Northampton, Mass.; Henry F. Hibbs, Amherst, Mass.; Thomas H. Perkins, Henry Woods, Wm. T. Parker, Moses W. Richardson, Samuel Atherton, Boston.

Chesapeake, Ohio & Southwestern.—Mr. James L. Frazier is appointed Superintendent, with office at No. 258 West Main street, in Louisville, Ky. The superintendents of the Transportation, Mechanical and Road departments will report to him, and his directions in regard to all matter pertaining thereto will be respected and obeyed.

Chicago & Northwestern.—The following circular from the office of second Vice-President and General Manager Mr. Huggitt is dated Chicago, Oct. 27.

"The following appointments are announced to take effect Nov. 1 proximo: H. C. Wicker, Traffic Manager; W. H. Stennett, Assistant to the General Manager; R. S. Hair, General Passenger Agent.

"The General Freight, Ticket and Passenger Agents will report to the Traffic Manager, who will report to the Second Vice-President and General Manager."

Decorah, Rochester & Red River.—The officers of this new company are Wm. H. Vallen, President; Hiram Thornton, Vice-President; Reuben P. Wales, Treasurer; George A. Adams, Secretary. The office is in Decorah, Iowa.

Illinois Central.—Mr. F. W. Baker is appointed Acting Master Mechanic of the Southern Division in place of Mr. E. D. Anderson, who has gone to the Louisville, New Orleans & Texas road. Mr. Baker was recently General Foreman of the McComb City shops.

Louisville & Nashville.—Mr. R. C. Burkhardt has been appointed Superintendent of Transportation, a new office.

Louisville, New Orleans & Texas.—Mr. C. J. Birdsong has been appointed Superintendent of the Northern Division, from Memphis to Vicksburg. He has been in the construction department for some time.

Maryland Central.—Mr. John C. Wrenshall has been appointed Receiver by the Maryland Circuit Court.

Michigan Central.—Mr. James D. Earle has been appointed Traveling Freight Agent, with headquarters in Detroit.

Missouri Pacific.—Mr. W. F. Towne is appointed General Eastern Freight and Passenger Agent, with office at No. 243 Broadway, New York, in place of W. M. Clarke, resigned.

Mobile & Ohio.—Mr. Edward Lister is appointed Train Dispatcher, with office at Jackson, Tenn. He was recently on the Texas & Pacific road.

Nantucket.—At the annual meeting in Boston, Oct. 23, the following directors were chosen: James W. Cartwright, Charles F. Coffin, John Dorr, P. H. Folger, John H. Norton. The board elected John Dorr President; John H. Norton, Clerk and Treasurer; P. H. Folger, Superintendent.

New York, Lake Erie & Western.—Mr. C. V. Merrick is appointed Chief Train Dispatcher at Elmira, N. Y., in place of C. C. Scott, resigned.

New York, West Shore & Buffalo.—Mr. W. W. Wheatley is appointed Chief Train Dispatcher of the Buffalo Division in place of Isaac H. McEwen, resigned. Mr. Wheatley was recently on the Chicago & Northwestern road.

Ohio & Lake Erie.—Mr. W. W. Reed, of Erie, Pa., is President of this new company.

Order of Railway Conductors.—At the annual convention in Boston, last week, the following officers were chosen: Assistant Grand Chief Conductor, E. H. Belknap, Galesburg, Ill.; Grand Junior Conductor, W. H. Durbin, Milwaukee, Wis.; Grand Inside Sentinel, H. O. Moore, Portland, Oregon; Grand Outside Sentinel, H. C. Cronin, Boston; Grand Secretary and Treasurer, W. P. Daniels, Cedar Rapids, Ia.; Member of Executive Committee, Hiram Herty, China, N. Y.; Member of Insurance Committee, Wm. H. Ingraham, St. Thomas, Ontario.

Pullman's Palace Car Co.—The duties of Manager of the shops at Pullman will be hereafter performed by Mr. W. E. Barrows, Assistant to the President. Mr. H. L. Spaulding, Manager of the Detroit shops, will be Superintendent of sleeping and passenger car construction at Pullman, Mr. F. J. Bradley, his Assistant Manager in Detroit, will act in the same capacity at Pullman. Mr. A. Rapp has been transferred from Pullman to Detroit and will have charge of the works there.

St. Louis Bridge.—Mr. W. G. Broughton has been appointed General Freight Agent.

St. Louis Union Depot.—Col. Joshua Hill, General Superintendent of the Vandalia Line, has been chosen President of the board.



**Sharpsville.**—Mr. Thomas M. King has been chosen President and General Manager. He is also General Manager of the Pittsburgh & Western road and General Superintendent of the Pittsburgh Division of the Baltimore & Ohio. Mr. W. C. Agnew is appointed Assistant General Manager.

**Texas & St. Louis.**—At the annual meeting in Pine Bluff, Ark., Oct. 21, the following directors were chosen: S. A. Bemis, Wm. Black, S. W. Fordyce, G. B. Hibbard, J. W. Paramore, John Parham, A. C. Stewart, N. T. White, V. D. Wilkins. The board elected officers as follows: President, J. W. Paramore, St. Louis; Vice-President, S. W. Fordyce, Hot Springs, Ark.; Executive Committee, J. W. Paramore, S. A. Bemis, G. B. Hibbard and A. C. Stewart, Mr. P. J. Milan is appointed General Master Mechanic, and Mr. M. B. Jones Master Car-Building. Their headquarters will be at Pine Bluff, Arkansas.

**Texas Trunk.**—At a meeting of the board in Dallas, Tex., Oct. 24, the following officers were chosen: President, S. J. Adams, Dallas, Tex.; Vice-President, J. W. White, Nashua, N. H.; Secretary, A. H. Stuart, Dallas, Tex.; Treasurer, Alfred Davis, Dallas, Texas.

**Union Pacific.**—A Kansas City dispatch reports that Mr. Sylvester T. Smith has been appointed General Superintendent of all the company's lines. Mr. H. O. Brinkerhoff succeeds Mr. Smith as General Superintendent of the Kansas Division.

**Worcester & Shrewsbury.**—At the annual meeting in Worcester, Mass., Oct. 28, the following directors were chosen: George H. Ball, H. H. Bigelow, J. H. Clarke, E. B. Stoddard, C. S. Turner, all of Worcester.

### PERSONAL.

—Mr. W. J. Latta, General Agent of the Pennsylvania Railroad in Philadelphia, was married Oct. 23 to Miss Kate Bingham, of Harrisburg.

—Mr. C. C. Scott, Chief Train Dispatcher of the New York, Lake Erie & Western road at Elmira, N. Y., has resigned that position and will go into other business.

—Mr. Frederick H. Gibbens, Treasurer of the Delaware, Lackawanna & Western Co., was married in Jamestown, N. Y., Oct. 29, to Miss Isabel C. Sanford, of that place.

—Mr. Isaac H. McEwen has resigned his position as Chief Train Dispatcher of the Buffalo Division of the New York, West Shore & Buffalo road. He will take some rest before accepting another position.

—Mr. W. W. Snow, Superintendent of the Ramapo Wheel & Foundry Co., has been nominated for Congress by the Republicans of the 15th New York District. The district is a close one, but Mr. Snow's personal popularity and eminent fitness for the office ought to secure his election. If all the railroad men who know and like Mr. Snow could have a chance to vote for him, he would certainly go to Congress by the biggest majority on record.

### TRAFFIC AND EARNINGS.

#### Railroad Earnings.

Earnings of railroad lines for various periods are reported as follows:

Nine months ending Sept. 30:				
1884.	1883.	Inc. or Dec.	P. c.	
E. Ten., Va. & G.	\$2,824,350	\$2,904,072 D.	\$79,722	2.7
Net earnings...	1,001,921	1,157,082 D.	155,761	13.4
Eastern...	2,697,880	2,740,789 D.	42,909	1.6
Gulf, Col. & S. F.	1,253,452	1,428,456 D.	175,004	12.3
N. Y., Sus. & W.	750,190	749,006 I.	1,184	1.5
Norfolk & West.	1,030,745	1,077,536 D.	46,791	2.0
Net earnings...	807,843	807,185 D.	658	0.0
Northern Cent.	4,085,008	4,532,137 D.	407,129	10.3
Net earnings...	1,529,981	1,785,151 D.	255,170	14.3
Ohio & Miss.	3,020,316	3,358,204 D.	337,888	10.1
Pennsylvania...	36,398,108	37,892,916 D.	1,494,808	3.9
Net earnings...	13,542,265	14,076,552 D.	534,287	3.8
Phila. & Reading.	2,316,919	2,081,626 I.	2,345,713	11.3
Net earnings...	9,705,636	9,734,431 I.	28,795	0.3
South Carolina...	816,913	826,986 D.	11,073	1.2
Shenandoah Val.	557,571	619,090 D.	61,519	9.9
Net earnings...	98,071	131,012 D.	32,941	25.1
Tol., Ann Arbor & N. M.	168,755	141,772 I.	26,983	19.0
West Jersey...	1,080,815	982,923 I.	97,892	7.9
Net earnings...	437,083	335,808 I.	101,275	10.4
Eight months ending Aug. 31:				
Louisiana West.	\$285,198	\$350,495 D.	\$65,297	18.6
Tex. & N. Orl's.	541,599	723,391 D.	181,792	25.1
Seven months ending July 31:				
Cleve., Col., Cin.	\$2,102,941	\$2,366,372 D.	\$263,431	11.1
Net earnings...	480,291	511,094 D.	170,803	26.2
Month of August:				
Chi. & East. Ill.	\$150,514	\$158,061 D.	\$7,547	4.8
Net earnings...	79,880	92,125 D.	12,245	13.3
Gal. H. & San A.	226,760	226,760 I.	0	0.0
Net earnings...	75,661	75,661 I.	0	0.0
Louisiana West.	37,074	55,788 D.	18,714	33.4
Net earnings...	18,226	18,226 I.	0	0.0
Tex. & N. Orl's.	75,592	119,310 D.	43,718	36.8
Net earnings...	31,142	31,142 I.	0	0.0
Month of September:				
E. Ten., Va. & G.	\$369,311	\$394,434 D.	\$25,123	6.3
Net earnings...	159,201	204,982 D.	45,781	22.3
Eastern...	338,015	340,053 D.	2,038	0.6
Gulf, Col. & S. F.	187,745	228,292 D.	40,547	17.8
N. Y., Sus. & W.	95,417	90,685 I.	4,732	5.2
Norfolk & West.	270,010	287,362 D.	17,352	6.2
Net earnings...	154,855	158,658 D.	3,803	2.3
Northern Cent.	476,811	545,727 D.	68,916	12.7
Net earnings...	191,494	250,757 D.	59,263	23.6
Ohio & Miss.	396,598	497,729 D.	101,131	20.3
Pennsylvania...	4,458,872	4,634,969 D.	176,097	3.8
Net earnings...	1,887,394	1,925,364 D.	37,970	1.8
Phila. & Reading.	2,876,451	3,333,217 D.	456,766	13.7
Net earnings...	1,324,827	1,748,682 D.	423,855	24.2
South Carolina...	109,599	132,821 D.	23,222	17.7
Shenandoah Val.	81,474	91,726 D.	10,252	11.2
Net earnings...	32,966	33,680 D.	714	2.1
Tol., Ann Arbor & N. M.	23,851	18,923 I.	4,928	25.9
West Jersey...	131,406	110,932 I.	20,474	18.4
Net earnings...	49,930	24,375 I.	25,555	105.7
Third week in October:				
Canadian Pac.	\$185,000	\$136,000 I.	\$49,000	36.0
Chi. & Alton...	22,324	22,567 D.	2,433	2.3
Chi. & East. Ill.	39,030	43,593 D.	4,563	9.0
Chi. Mil. & St. P.	562,000	582,416 D.	20,416	3.5
Chi. & Nor. West.	558,500	608,600 D.	48,100	7.9
Chi., St. P. & M. & O.	143,700	141,200 I.	2,500	1.8
Cin., Ind., St. L. & Chi.	51,065	55,557 D.	4,492	8.0
Louisv. & Nash.	308,980	330,470 D.	21,490	7.1
Mil. & Northern.	10,950	10,680 I.	270	2.3
No. Pacific.	338,318	319,700 I.	18,618	5.3
Roch. & Pitts.	24,294	17,020 I.	7,274	29.7
St. L. & San Fran.	110,200	78,200 I.	32,000	41.0
Wab. St. L. & P.	401,000	381,475 I.	19,525	5.1

Weekly reports of earnings are usually estimated in part, and are subject to correction by later statements.

### Grain Movement.

For the week ending Oct. 18, receipts and shipments of grain of all kinds at the eight reporting Northwestern markets and receipts at the seven Atlantic ports have been, in bushels, for the past eleven years:

Year.	Northwestern receipts.		Northwestern shipments.		Atlantic receipts.
	Year.	Total.	By rail.	P. c.	Year.
1874	2,805,468	3,405,008	321,261	9.4	3,486,749
1875	5,345,597	2,589,240	1,213,492	46.9	3,705,490
1876	4,495,985	3,910,678	1,359,160	34.8	4,010,230
1877	3,708,164	3,215,675	681,309	20.6	6,374,989
1878	4,417,000	3,498,848	891,528	25.5	5,637,689
1879	7,564,000	4,283,720	1,387,767	32.4	7,571,863
1880	8,606,749	5,639,944	1,874,401	33.2	7,695,300
1881	4,004,019	4,747,161	2,146,046	45.2	3,330,864
1882	4,562,201	3,273,210	1,640,808	50.1	3,892,208
1883	6,250,317	5,280,610	2,236,790	42.2	4,531,602
1884	7,249,700	4,684,910	1,748,055	37.3	3,912,355

Thus the receipts of the Northwestern markets for the week this year were 980,000 bushels more than in the corresponding week of last year, and more than any other year except 1879 and 1880. They were, however, 865,000 bushels less than in the previous week of this year and the smallest for six weeks. The decrease was chiefly at Toledo and Detroit, which had been getting unusually large receipts.

The shipments of these markets for this year were 596,000 bushels less than in the corresponding week of last year, and less than in 1880 or 1881, but larger than in any other year. They were 1,099,000 bushels less than in the previous week of this year, and the smallest for 10 weeks. The rail shipments were 756,000 bushels less than the week before, and the smallest for 10 weeks, which is very good evidence that rates were maintained. The lake shipments were but 263,000 bushels less than the week before. The shipments down the Mississippi were but 32,029 bushels.

The receipts of Atlantic ports for the week were more than in the corresponding week of 1881 and 1882, but less than in any other since 1875. They were also 588,000 bushels less than in the previous week of this year and the smallest for six weeks.

Exports from Atlantic ports for this week to Oct. 18 have been:

	1880.	1881.	1882.	1883.	1884.
Flour, bbls.	129,775	107,136	156,375	139,638	157,414
Grain, bu.	5,549,658	2,837,246	1,846,694	1,869,455	1,592,107

The exports were less this year than in any other of the five. Wheat and flour formed 82 per cent. of the total exports, and the exports of these were much greater than last year.

### Coal.

Coal tonnages for the week ending Oct. 18 are reported as follows:

	1884.	1883.	Inc. or Dec.	P. c.
Anthracite	842,277	757,398	I. 84,879	11.2
Eastern bituminous	108,646	208,380	D. 9,743	4.7
Coke	43,978	59,695	D. 15,717	26.2

Anthracite tonnage for the week was heavy. An increased demand is reported, as was to be expected from the season. The feature of the trade at present is the larger demand for the small sizes, stove and chestnut—especially the latter—showing that the coal at present is wholly for domestic purposes.

The coal tonnage of the Pennsylvania Railroad for the week ending Oct. 18 was:

	Coal.	Coke.	Total.
Line of road	142,186	41,732	183,918
From other lines	72,434	2,246	74,680
Total	214,620	43,978	258,598

The total tonnage this year to Oct. 18 was 10,506,013 tons, against 9,672,880 tons to the corresponding date last year; an increase of 833,133 tons, or 8.6 per cent.

Cumberland coal shipments for the week ending Oct. 25 were 67,014 tons. The total shipments this year to Oct. 25 were 2,347,243 tons, against 2,086,936 tons to the corresponding date last year; an increase of 260,307 tons, or 12.5 per cent.

The coal tonnage of the Chesapeake & Ohio Railroad for the nine months ending Sept. 30, was:

	1884.	1883.	Decrease.	P. c.
Coal	631,356	670,349	38,993	5.8
Coke	51,802	77,834	26,032	33.4
Total	683,158	748,183	65,025	8.7

The loss was in gas and canal coals entirely, the New River and other steam coals showing a small increase in shipments.

### Petroleum.

The production and shipments of the Pennsylvania and New York oil wells for September are given by Stowell's *Petroleum Reporter* as follows, in barrels of 42 gallons:

	1884.	1883.	Inc. or Dec.	P. c.
Production	1,048,280	1,013,370	I. 34,910	1.6
Shipments	2,292,087	2,325,574	D. 33,487	1.4
Stock, Sept. 30.	38,740,734	35,752,677	I. 2,988,057	8.4
Producing wells.	21,900	17,300	I. 4,600	26.6

The production was exceeded in five months of the present year and in four months of last year. Of the total the Allegheny District, in New York, furnished 10.3 per cent.; the Bradford District, in Pennsylvania, 50.6; the Warren District 22.3, and the Lower District 16.8 per cent.

The shipments exceeded the production for the month for the first time in several months.

The stock reported is all in the pipe lines; it was diminished during the month by 343,827 barrels, which is the excess of shipments over production for the month.

During September 89 new wells were completed, and 17 dry holes are reported. The average daily production of the new wells was 42 barrels each. At the close of the month there were 179 new wells in process of drilling.

Shipments of oil were as follows, in barrels:

	Crude.	Refined.	Total.	Per c.
New York	650,421	72,122	722,543	31.5
Philadelphia	437,280	71,090	508,370	22.2
Baltimore	192,332	5,094	197,426	8.6
Boston	21,772	76,910	98,682	4.3
Cleveland	315,256	315,256	630,512	13.8
Pittsburgh	81,067	81,067	162,134	3.5
Local points	322,824	46,003	368,827	16.1
Refined at Creek refineries	271,135	.....	.....	.....
Total	2,292,087	2,292,087	4,584,174	100.0

In this table the refined oil is that refined at Creek refineries and thence shipped to the points named; the refined is reduced to its equivalent in crude, so that the total represents the amount of crude finally reaching each place.

The *Reporter* says: "A review of the petroleum trade for the month of September is practically a history of the life of one well. As stated in our last issue, the most prominent feature of interest during the month named was the Phillips well on Thorn Creek. Starting off on Sept. 2 at a fair rate, while in the third sand, this remarkable well, upon being drilled into the fourth sand, rapidly increased its output to 90 barrels an hour and has averaged about 90 barrels or over 2,000 barrels per day up to the date of the present writing, Oct. 18. While we have had larger wells, yet for an example of long continued and heavy production the Phillips well bears off the palm. The report for September regarding production is on this account largely the report

of one well. As it is, we find indicated a very considerable decrease in daily average, but had it not been for the Phillips gusher there would have been a clear decrease in the diurnal output of 5,000 barrels, a drop of greater dimensions than has occurred for many months."

### Cotton.

Cotton movement for the week ending Oct. 24 is reported as follows, in bales:

Interior markets:				
	1884.	1883.	Inc. or Dec.	P. c.
Receipts	156,808	145,320	I. 11,478	9.9
Shipments	122,851	101,314	I. 21,537	21.4
Stock, Oct. 24	129,511	236,986	D. 107,475	43.7
Seaports:				
Receipts	285,112	252,645	I. 32,467	12.8
Exports	156,667	130,329	I. 26,338	30.3
Stock, Oct. 24	542,237	723,186	D. 180,949	25.0

The total movement from plantations for the cotton year (from Sept. 1) to Oct. 24 is estimated at 1,311,047 bales; the decrease, as compared with last year, is 150,004 bales; the decrease, as compared with 1882, is 24,508 bales; and with 1881, 144,717 bales.

### Passenger Rates.

Rates from New York to Chicago continue unchanged, the West Shore and Lackawanna still selling first-class tickets at \$15, while the New York Central retains its first-class rate of \$16.50. The Pennsylvania has not yet joined in the war.

The local war between the West Shore and the New York Central continues hot. The West Shore has applied the local rate of 1 cent per mile to tickets between points on the Hudson River Division and stations west of Albany, as well as to tickets to and from New York, and the Central follows this reduction. Some pressure has been brought to bear on the West Shore Receivers to restore rates, but they claim that the reduction is largely increasing the earnings of the road, and they have the support of the great majority of the bondholders.

In the Kansas City war an agreement was reached on Oct. 25 by which full rates between Chicago and Kansas City were restored, and the agreement renewed. The question of fines imposed under the old agreement, which was the moving cause of the trouble, was referred to arbitration.

### Chicago-Ohio River Pool.

At a meeting held in Chicago, Oct. 22, a report was presented by the Committee on Divisions which was discussed and objected to, and the question finally referred to Messrs. Malott and Richardson, who are to prepare a new division. The pool was extended for three months from Nov. 1. The question of further extending the pool to take in the Illinois Central and the Wabash was discussed, but not acted on.

### Cincinnati-Florida Passenger Line.

An agreement has been concluded by which through sleeping cars will be run during the winter between Cincinnati and Jacksonville, Fla., over the Cincinnati, New Orleans & Texas Pacific from Cincinnati to Chattanooga, the East Tennessee, Virginia & Georgia from Chattanooga to Jesup, Ga., and the Savannah, Florida & Western from Jesup to Jacksonville.



control, viz., that a grantee of corporate assets, as in this case, takes, *cum onere*; that it must, under the facts disclosed, be treated as the successor of the prior corporation, charged as a trust as to assets received. It is charged that the bondholders or mortgagee knew of the respondent's demand, which is an equitable lien, and prior in right. If they had notice thereof they must take subordinate thereto.

"There is also another and controlling proposition. The old corporation was created by special act of the general assembly in 1857. Its provisions were minute and specific, in many essential details, not only as to obligations and rights of stockholders, but as to their duties respectively to each other and to the public, particularly to the state, to which annual reports were to be made, etc., etc. The construction of the road was to be commenced within 10 years and completed within 20 years thereafter—a fair record of the whole expense of constructing the road to be kept, with the privilege reserved to the state to purchase the same at rates named at the expiration of 50 years.

"It is clear that the action of the corporation in transferring all its property thus formed was beyond its corporate authority and evasive of its chartered obligations. The conclusive effect of what was done was to fasten a lien on the assets transferred prior in right to the mortgages."

#### OLD AND NEW ROADS.

**Allegheny Valley.**—The special master in the fore closure suit has submitted a lengthy report, in which he finds that the bonds of the Allegheny Valley Railroad secured by mortgage are: First mortgage, \$4,000,000; first mortgage Low Grade Division, \$10,000,000; the Commonwealth (second mortgage Low Grade Division), \$3,500,000; income bonds, \$9,700,000; that the road had defaulted in the payment of interest on the bonds; that as a consequence the Pennsylvania Railroad Co. under its contract was compelled to purchase the same, and holds coupons for such interest, with all the rights and privileges of the original holders, and that the defendant company was never able to contribute out of its income any money toward the payment of the interest on its income bonds. He therefore recommends that the sale of the property, franchises, rights, interests and credits of the Allegheny Valley Railroad Co. be made by the Receiver at the courthouse in Westmoreland County on a day to be fixed by the Court, if the report is sustained. The master also finds that the debt of the company exceeds the assets by \$4,077,000.

**Atlantic & Pacific.**—President Nutt states that this company intends to build next year 150 miles of new road westward from the present terminus of the Central Division in the Indian Territory towards Albuquerque. The company will need \$10,000,000 for construction purposes, and half this is already secured.

**Baltimore & Ohio and the Pennsylvania.**—In the United States Circuit Court in Philadelphia, Oct. 27, Judges McKennan and Butler filed an opinion dismissing the motion of the Baltimore & Ohio for an injunction restraining the Pennsylvania Railroad Co. from refusing to carry its trains through to New York. The Court said, after stating the facts in the case:

"It is thus seen that two questions are raised: First, have the contractual relations entered into by the parties been terminated? Second, is it the complainant's right independently to the contract to have its cars accepted and transported over the respondent's roads?

"The first question is not very important. It is quite plain that if the complainant was justified by the respondent's acts after May 13, in postponing arrangements for the change contemplated by the notice of Oct. 3 through the Philadelphia, Wilmington & Baltimore Railroad Co. Counting from the latter date, as we think, in view of all the circumstances, should be done, the 30 days will soon expire.

"The second question is one of unusual importance. To justify interference by injunction, at this stage of the litigation, the right of the complainant to have what it demands of the respondent must be entirely clear. That it is not clear, but open to very grave doubt, is quite plain. It is unnecessary and would be unwise at this time to say more respecting it. The suggestion that the Court is simply asked to preserve the existing relations of the parties until final hearing is without force in view of the fact that these relations are the result of a contract which provides for their termination at this time.

"If the respondent will signify its willingness to accept and transport the complainant's cars between Philadelphia and New York, as provided by the contract, until and including Nov. 2 next, the motion for an injunction will be dismissed."

Counsel for the Pennsylvania made the agreement required, and after Nov. 2 the Baltimore & Ohio trains will cease running to New York.

The Philadelphia *Ledger* says: "We learn that the Baltimore & Ohio Railroad, in view of the cutting off of its traffic between Baltimore and New York over the Pennsylvania lines, is seriously contemplating opening a new route in connection with the New Jersey Central, the projected plan is to bring out a branch of the new line of the Baltimore & Ohio between Baltimore and Philadelphia to the shore of the Delaware Bay, opposite the mouth of Cohansey Creek, about 45 miles below Philadelphia. At this point the cars can be transferred across by floats to the New Jersey Southern Railroad piers, on the Jersey shore at Bay Side, and then the road is clear to New York. The distance for transfer across the bay is six miles."

If this is done it will be probably only as a temporary expedient, to make a connection without waiting for the considerable time that it will take to get the Baltimore & Ohio's new line into and across Philadelphia. The track south of Wilmington could be laid in a comparatively short time now, but it will take some time yet to finish the bridge over the Susquehanna, which is necessary to any connection.

**California Southern.**—The Boston *Advertiser*, of Oct. 29 says: "Since Mr. Nickerson resigned and Mr. Peabody was chosen President of the California Southern, a scheme of reorganization has been put forth which has already received the assent of a large nucleus of the stock and bond holders. The Atchison, Topeka & Santa Fe practically becomes a party to it. It is proposed by the latter to build a connection some 78 miles in length between the northern terminus of the California Southern and the Mojave Division of the Southern Pacific, which was recently acquired by the Atlantic & Pacific. This will give the new transcontinental line an outlet at San Diego, the Pacific terminus of the California Southern, and this will be a powerful advantage in their hands for securing a faithful observance by the Southern Pacific of the contract giving them entrance to San Francisco over its road. Under the reorganization scheme it is proposed that the present bonds of the California Southern shall be retired and non-cumulative income bonds be issued in their stead. Then a first mortgage for \$10,000 a mile will be placed upon the entire line, built and to be built as proposed, some 300 miles in length, and the bonds secured by it will be taken at par by the Atchison, which will also

become the owner of one-half of the stock. If this scheme is carried out, it will give the California Southern an important eastern trunk line connection, as originally projected. There are rumors that some of those interested consider the project unduly favorable to the Atchison. Be this as it may, the connection proposed is the only one likely to be achieved, and without it the earning capacity of the property is exceedingly limited. The connection may not greatly enhance this capacity, unless for some reason the traffic of the interior shall prefer San Diego to San Francisco."

**Cape Fear & Yadkin Valley.**—Track on this road is now laid to Bennettsville, S. C., 24 miles southwest from the late terminus at Shoe Heel, N. C. Soon after Nov. 1 regular trains will run through over the whole length of the road from Greensboro, N. C., to Bennettsville, 159 miles. Work will be continued on the extension of the road southward.

**Central Iowa.**—The following circular has been issued to the stockholders:

"The board of directors deem it for the interest of the company that a special meeting of the stockholders should be held for the purpose of taking action upon certain questions in regard to which differences of opinion have heretofore existed, and upon which they think it desirable that action should be taken by the stockholders.

"In order that there may be united and harmonious action, the present board of directors have decided to tender their resignations, and a new board will be elected at such meeting.

"Therefore, a special meeting of the stockholders is hereby called, to be held in the office of the company, at Marshalltown, Ia., Oct. 29, 1884, at noon, for the following purposes, to wit: the election of a board of directors; also, to vote upon the issue of consolidated bonds, secured by mortgage, upon the property of the company in Iowa, and upon the line in Illinois controlled by this company, and the ratification of the mortgage which has been already executed to secure such bonds; also, the ratification and confirmation of the action of the joint committee of bondholders at their meeting held on June 7, 1882, in transferring to the stockholders the voting power of the company, and of the several amendments to the articles of incorporation of the company, made on Nov. 10, 1881, and on June 7, 1882; and also authorizing the board of directors to guarantee the bonds of the Keithsburg Bridge Co., and agree upon a tariff upon freight and passengers to secure the payment of interest upon such bonds, and provide for the ultimate acquisition of the bridge by this company, without encumbrance."

This is the result of a compromise. The Sage-Sully directors resign, leaving the field clear for the election of a new board, and the Boston party agree to approve the consolidated mortgage and the guarantee of the Keithsburg Bridge bonds. All matters in dispute between the railway company and the construction company are to be referred to arbitrators. The new board of directors has been agreed upon, and it is understood that Mr. Elijah Smith will be President.

**Central, of New Jersey.**—The Dinsmore suit to set aside the lease of this road to the Philadelphia & Reading Co. came up again on final hearing in the United States Circuit Court in Philadelphia, Oct. 27. The case was argued at some length by counsel on both sides, and the Court reserved its decision.

Reports are current that the lessee will not pay the interest due Nov. 1 under the lease. No notice of payment has been published yet, but the probability seems to be that it will be paid.

**Central Pacific.**—This company adopts the Standard Time system on Nov. 1, when all trains on its lines west of Ogden & El Paso will be run by 120th meridian or Pacific Coast time, under that system.

**Chicago & Eastern Illinois.**—This company's statement for August and the two months of the fiscal year from July 1 to Aug. 31 is:

	1884.	1883.	Two months—	1884.	1883.
Earnings.....	\$150,514	\$153,061	\$278,906	\$278,754	
Expenses.....	70,633	65,936	142,393	134,090	
Net earnings.....	\$79,881	\$87,125	\$136,513	\$144,664	
Per cent. of expenses..	46.8	41.7	51.0	48.1	

For the two months the gross earnings increased \$152, and the expenses \$8,908, or 6.2 per cent., leaving a decrease of \$8,151, or 5.6 per cent., in net earnings.

**Cincinnati, Hamilton & Dayton.**—The following statement is made for the six months of the fiscal year from April 1 to Sept. 30:

	1884.	1883.	Inc. or Dec.	P. c.
Earnings.....	\$2,102,941	\$2,366,372	D.	11.1
Expenses (63.9 per cent.).....	1,322,950	1,715,278	D.	5.4
Net earnings.....	\$779,991	\$651,094	D.	19.5
Interest and guaranteed dividends.....				334,108
Surplus.....				\$195,083

This surplus is sufficient to pay the semi-annual dividend of 3 per cent. on the common stock (which takes \$105,000) and leave a surplus of \$90,083 for the half-year.

**Cleveland, Columbus, Cincinnati & Indianapolis.**—This company makes the following statement for the seven months ending July 31:

	1884.	1883.	Inc. or Dec.	P. c.
Earnings.....	\$2,102,941	\$2,366,372	D.	11.1
Expenses.....	1,322,950	1,715,278	D.	5.4
Net earnings.....	\$779,991	\$651,094	D.	19.5
Fixed charges.....	463,593	376,748	I.	20.4
Surplus.....	\$316,398	\$274,346	D.	15.3

Expenditures this year for additions to property were \$157,154, showing a deficit of \$130,456 for the seven months, against a surplus of \$45,242 last year, when the sum of \$229,104 was paid on property accounts.

**Columbus & Cincinnati Midland.**—The track is reported all laid from Columbus, O., southeast to a connection with the Cincinnati, Washington & Baltimore road at Clinton Valley, a distance of 71 miles. No date has yet been fixed for the opening of the line. It has been built by the Baltimore & Ohio, and, with the other lines of that company, completes a new route from Pittsburgh and Wheeling to Cincinnati, the distance from Pittsburgh to Cincinnati being 818 miles. It also makes a loop or connection between the company's Cincinnati and Chicago lines which may be very convenient.

**Decorah, Rochester & Red River.**—This company has been organized to build a railroad from Decorah, Ia., northward to Rochester, Minn., to St. Paul, with a branch or branches to some point on the Red River. It is said to be organized in the interest of the Burlington, Cedar Rapids and Northern Co., which has just completed a line to Decorah.

**Denver & Rio Grande.**—It is announced that the coupons due Nov. 1 on the \$6,882,500 first-mortgage bonds will not be paid. The company had previously defaulted

on the consolidated and general mortgage bonds, and will now be in default on all its issues.

**Detroit, Grand Haven & Milwaukee.**—The Supreme Court of Michigan has rendered a decision in the suit brought to test the validity of the charter of this company affirming its legal existence as a corporation.

**East Tennessee, Virginia & Georgia.**—This company makes the following report for September and three months of its fiscal year from July 1 to Sept. 30:

	September—	1883.	Three months—	1884.	1883.
Earnings.....	\$369,311	\$394,434	\$2,824,350	\$2,904,072	
Expenses.....	210,110	189,452	1,822,429	1,746,390	
Net earnings.....	\$159,201	\$204,982	\$1,001,921	\$1,157,682	
Per cent. of exps.....	56.9	48.1	64.5	60.1	

For the three months this shows a decrease of \$79,722, or 2.7 per cent., in gross earnings, and of \$155,761, or 13.4 per cent., in net earnings. The expenses increased \$76,039, or 4.4 per cent. for the same period.

**Grand Trunk.**—A dispatch from London, England, Oct. 23, says: "The regular semi-annual meeting of the Grand Trunk Co. was held to-day. There was a large attendance and much excitement. Sir Henry Whatley Tyler, member of Parliament, was cheered and bussed upon moving the adoption of the company's report. He complained the company had been venomously and anonymously attacked the past year, but he was unable to disguise the fact that the working of the road the past half year had been unsatisfactory. Every element, he said, had been adverse. It was not the directors' fault the road had not been more successful, but was due to defective harvests and commercial depression. Other competition in through rates also helped to diminish the revenue. The report shows a deficit as compared with the report for the corresponding half year of 1883 of £48,000 in passenger traffic, and £174,000 in freight traffic, but a saving of £147,000 had been effected in working expenses. Tyler said he was hopeful of improvement, because there are now three roads running to New York. With regard to the distribution of the pool, although Adams' award was adverse to the company, he was happy to say the case would be reheard, and there was no doubt the decision would be reversed. Lord Claude Hamilton, who has recently returned from Canada, gave an excellent account of the condition of the line and its rolling stock."

**Gulf, Colorado & Santa Fe.**—At the recent annual meeting President Sealy made the following statement to the stockholders: "Your board of directors having changed your fiscal year to end Dec. 31, instead of July 31, and having directed also that the general statement of the business of the past 12 months be included, in accordance with this change, with the five months extending from July 31, 1884, to Dec. 31, 1884, making 17 months in all, relieves me from presenting at this time any extended report of the operation of the road for the past 12 months. The past year's business in Texas has been disastrous to all railroad companies. The very short crops, together with the great depression in all kinds of trade, have reduced our gross earnings, so that in your next general statement there will be a very little surplus left for the stockholders. The small business in Texas the past year induced unhealthy competition, which resulted in lowering the rates for carrying freights, when full rates should have been received. We cannot be held in any way responsible for cutting rates. It has been the policy of this company to make fair rates, and to maintain them, but when competing lines, for the purpose of securing additional business, offer to do it at reduced rates, we must, of necessity, follow. We are pleased to state, however, that to cover the present and coming season's business, the general managers of the principal competing lines of road in Texas have entered into contracts advancing rates of freight, and agreeing to maintain them, on the basis of a fair division of business at all competing points, so that even with no more business the coming year than we have had the past, our net revenue will be much larger.

"Anticipating much more business than we received, a large amount of money was expended on the road-bed, in widening cuts, filling embankments, renewing ties, etc., and the road is in such good condition now that it can be maintained at a much less expense than in the past. Fifteen thousand tons of 60-lb. steel rails have been purchased and are now being put down on the main line of road in place of the 56-lb. iron rails in use. When this is all down, a large saving of expense will be accomplished.

"The right of way through the Indian Nation has been secured from the general government, but up to the present time your directors have not thought it advisable to do anything toward extending the road in that direction. The condition of the privilege is that 100 miles of road shall be completed within three years. There is now under contract for construction about 10 miles of new road, extending on the Northeastern Branch from Montgomery toward the International & Great Northern Railroad. The principal object of this extension is to get further into the timber country to supply ourselves with lumber. The policy of the management has been to keep the road-bed and rolling stock in good condition, so that life and property entrusted to its care would have safety and protection. To do this, and to provide for the fixed charges on the road during the prevalence of bad crops and depressed trade, it has become necessary to economize in all directions, and we have had to ask our employees to share the hard times with us by reducing their wages, promising them an advance again when business justifies it."

**Houston, East & West Texas.**—The earnings of this road for the year ending Sept. 30 were as follows:

Gross earnings (\$2,167 per mile).....	\$303,404
Expenses (44.6 per cent.).....	135,385
Net earnings (\$1,300 per mile).....	\$168,019

Work is now in progress on the extension of the road from Nacogdoches to Shreveport.

**Illinois Central.**—The Chicago *Inter-Ocean* of Oct. 23 says: "Some important information was received here yesterday in regard to a matter of considerable interest to Chicago and the traveling public. The report was to the effect that the managements of the Michigan Central and the Illinois Central roads had determined not to make any further attempts to secure the lake front property, but would build a new depot of stately dimensions upon the site of the present passenger station. It was stated that architects are now at work upon the plans, and that the building would not cost much less than \$1,000,000. It is expected that work will be begun early during the coming spring, and that the building will be rapidly pushed to completion. This is an outline of the report received here, and while it comes from a reliable source, it is not official. Mr. J. C. Clarke, President of the Illinois Central Road, could not be seen, and President H. B. Lydard, of the Michigan Central, is out of the city. Other officials had received no advices."

**Jackson Branch.**—This road is now completed, and will soon be formally opened for traffic. It extends from the town of Jackson, the county seat of Cape Girardeau County, Mo., southward to Allenville, on the Belmont



Branch of the St. Louis, Iron Mountain & Southern road, a distance of 16 miles, through a thickly settled farming country.

**Kansas City, Fort Scott & Gulf.**—The following circular from the General Manager's office of this road is dated Kansas City, Oct. 22: "The Pleasant Hill & De Soto Railroad having, by purchase, become the property of the Kansas City, Clinton & Springfield Railroad Co., will until further notice be operated for account of that company by the Kansas City, Fort Scott & Gulf Railroad Co. Employees will report to, and receive instructions from, the officers of that company in their respective departments."

**Maryland Central.**—In the Circuit Court at Towson-town, Md., Oct. 24, Messrs. Spence, Brown, and others, trustees under the mortgages, filed a bill asking for the appointment of a receiver. The Court granted the application, and appointed John C. Wrenshall Receiver. The road is of 3 ft. gauge, and extends from Baltimore to Delta, Pa., 45 miles. It was completed last January. The funded debt consists of \$800,000 first and \$300,000 second mortgage bonds, of which only \$400,000 firsts have been sold, the balance and all of the seconds being pledged as security for loans. The road has not yet had time to develop much business.

**Mexican Railroad Notes.**—The following notes are from the *Mexican Financier* of Oct. 18:

Mr. Theophilus Masac has recently arrived in this city (Mexico) as Agent for the Missouri Pacific and controlled lines.

A new route for tourists in Mexico has been opened by the establishment of a stage line between Saltillo and San Isidro by Daniel Sada, of Saltillo. San Isidro is a station on the Mexican Central Railroad, about 125 miles north of Fresnillo, and only 75 miles from Saltillo, the terminus of the Mexican National, so that by this means the journey from Laredo to the City of Mexico can be made in five days at a cost of about \$70. The trips will be made under the following conditions. On the 24th of each month a coach will leave Saltillo for San Isidro station, carrying all persons who shall apply for passage; on the 11th another coach will leave in the same manner, but in either case only in the event that at least four persons apply for passage. On any other day a coach will be ready to make the same trip, if requested by at least two passengers, and upon the condition that they subject themselves to rules established by the line. For American tourists who come to this city via the Atchison, Topeka & Santa Fe and the Mexican Central, this route will afford a pleasant diversion on the return trip, giving them an opportunity to pass through northeastern Mexico and to visit the interesting towns of Saltillo and Monterrey. The former is noted for its equable and healthy climate, beautiful mountain scenery, pure water and fine fruits. Visitors from Mexico to the New Orleans Exposition, next winter, will find this a desirable route to take, either going or coming. The journey by coach will not be arduous, as it requires but two days, with no night travel.

**Minneapolis, Sault Ste. Marie & Atlantic.**—This road is now completed to Bruce, Wis., 11 miles eastward from the last point noted, and 46 miles from the western terminus at Turtle Lake. Regular trains will begin running Nov. 1, over this section of the road.

**Mitchell, West Baden & French Lick.**—This company has been organized to build a railroad from Mitchell, Ind., to French Lick Springs, a distance of 20 miles. The springs at French Lick are becoming quite a popular resort.

**New York & Long Branch.**—The suit of the Pennsylvania Railroad Co. to make permanent the injunction restraining this company, the New Jersey Central and the Reading from breaking the contract for the joint operation of the Long Branch road came up again in the United States Circuit Court in Philadelphia, Oct. 28. It was generally supposed that the agreement made last summer settled this suit, but it now appears that this was not the case. Arguments were continued on Oct. 29, the Reading counsel claiming that the contract was illegal in itself and had besides never been properly ratified.

A dispatch from Philadelphia, Oct. 29, says: "Before Wayne MacVeagh, of counsel for the Pennsylvania Railroad Co. in the legal battle with the New Jersey Central to obtain the New York & Long Branch Division, had finished his argument before Judge McKenna to-day, the Court suggested that the matter had better be adjusted amicably. He intimated that a new contract, based on the pooling of the business and devoid of the features complained of by the New Jersey Central, should be made. Mr. MacVeagh said that the Pennsylvania was anxious to make such an agreement, and Franklin B. Gowen, for the Jersey Central, said that his company, too, was anxious to come to terms. Upon this statement the Court adjourned the hearing. The Judge said, however, that if the opposing companies should not arrive at an agreement he would hear Mr. MacVeagh's argument and pass judicially upon the matter."

**New York, Philadelphia & Norfolk.**—The track on this road is now laid to Cape Charles City, Va., the southern terminus, 73 miles from Pocomoke, where the new part of the line begins, and 104 miles from the connection with the Delaware Railroad at Delmar. The company, including its purchase of the old Eastern Shore road, now owns 120 miles of road, the main line from Delmar to Cape Charles City and a branch from King's Creek, Md., to Crisfield, 16 miles. The road will be opened for business as soon as the ballasting is completed, when trains will be run through from Philadelphia to Cape Charles City, and a ferry established thence to Norfolk.

The company has made an agreement for exchange of business with the Seaboard & Roanoke road and the Seaboard Air Line, including that road, the Raleigh & Gaston, the Raleigh & Augusta and the Carolina Central roads. It is expected also that some traffic agreement will be made with the Norfolk & Western road. It is the intention to use ferry-boats which will transfer cars to and from Norfolk without breaking bulk.

**New York, West Shore & Buffalo.**—Russell Sage, Cyrus W. Field and other bondholders have addressed a remonstrance to the Receivers and to the Trustees against the cutting of rates, claiming that this action is damaging to the road. They further threaten legal action for the removal of the Receivers, or to compel them to adopt a different policy. On the other hand the Receivers claim that the low rates have largely increased the earnings of the road, and their course has been approved by the committee representing a large majority of the bondholders. Under these circumstances it is not probable that the Court would take any action.

The Receivers report that the road is now earning a considerable surplus over its working expenses, for the first time since it was opened.

Reports have been current in New York of the formation of a syndicate which will offer to lease the road and so take it out of the possession of the Receivers. It is not clear, however, that the syndicate as proposed could give guarantees which would be acceptable to the majority of the bond-

holders or to the Court. The indications are that a large proportion of the bonds are now held by parties who intend to keep them and to join in the reorganization of the company.

**Norfolk & Western.**—This company makes the following statement for September and the nine months ending Sept. 30:

	September.	September.	September.	September.
	1884.	1883.	1884.	1883.
Gross earnings.....	\$270,010	\$287,202	\$1,930,744	\$1,977,536
Expenses.....	116,115	128,544	1,122,901	1,080,351
Net earnings.....	\$154,895	\$158,658	\$807,843	\$897,185
Per cent. of exps. ....	43	45	58	55

For the nine months there was a decrease in gross earnings of \$46,792, or 2 per cent.; an increase in expenses of \$42,550, or 4 per cent., and a resulting decrease in net earnings of \$89,342, or 9 per cent. The mileage for September was 503 miles in both years; for the nine months, 503 miles this year and 464 miles last year.

**Northern Central.**—This company's statement for September and the nine months ending Sept. 30 is as follows:

	September.	September.	September.	September.
	1884.	1883.	1884.	1883.
Gross earnings.....	\$476,811	\$545,727	\$4,085,008	\$4,532,137
Operating exps. ....	252,376	279,029	2,276,005	2,495,028
Extraordinary exps. ....	32,941	15,341	279,022	271,958
Total expenses.....	\$285,317	\$294,370	\$2,555,027	\$2,766,986
Net earnings.....	\$191,494	\$250,737	\$1,529,981	\$1,765,151

The result for the nine months was a decrease of \$467,129, or 10.3 per cent., in gross earnings, and of \$255,170, or 14.3 per cent., in net earnings. Operating expenses decreased \$219,023, and extraordinary expenses increased \$7,064, making a decrease of \$211,959, or 7.7 per cent. in total expenses.

**Northern Pacific.**—Regular trains have been put on the branch from Portland, Or., to Kalama, which was built last year, but has not been operated until now. With the old road from Kalama north it completes a line from Portland to Puget Sound at New Tacoma. The trains are transferred across the Columbia River at Kalama by a steam ferry-boat.

**Ohio Central.**—The plan of reorganization prepared by the bondholders' committee, which will be issued in a few days, provides for the issue of \$5,000,000 first-mortgage 5 per cent. bonds, \$3,750,000 preferred stock and \$7,250,000 common stock. Holders of the present \$3,000,000 first-mortgage bonds will receive \$3,000,000 new firsts and \$750,000 preferred stock, on paying an assessment of \$5 per bond. Holders of the \$3,000,000 income bonds will receive an equal amount in new preferred stock on paying an assessment of \$50 per bond. Holders of the \$22,000,000 present stock will receive \$6,000,000 (30 per cent.) in new stock, on paying an assessment of \$1 per share. The company will then have in its treasury \$2,000,000 first-mortgage bonds, \$650,000 common stock and the cash realized from assessments (\$385,000 if all are paid, which is not likely) for the purpose of putting the road in good order, buying equipment and providing terminal facilities at Toledo.

Under this plan the fixed charges of the reorganized company will be limited to \$250,000 yearly. It does not make any provision for the River Division securities, applying to the main line only.

**Ohio & Lake Erie.**—It is reported that this new organization has let a contract to a New York firm of contractors to build its road from Greenville, Pa., to Girard, a distance of 60 miles. The company intends to use the old canal as a road-bed.

**Oregon Railway & Navigation Co.**—On the Baker City Branch, which is to connect with the Oregon Short Line, track was laid on Oct. 25 to a point 33 miles east of Baker City and 391 miles from Portland, leaving only 13 miles to be completed to reach Huntington.

Reports are current in New York that recent settlements of Oregon & Transcontinental loans have transferred a large amount of this company's stock to Jay Gould and others, who will use it to control the company in the interest of the Union Pacific.

**Pacific Railroads and the Government.**—A Washington dispatch says: The Commissioner of Railroads William H. Armstrong, has submitted to the Secretary of the Interior his annual report. He states that the property and accounts of the railroads coming within the jurisdiction of the office have been examined, the several companies having freely accorded all proper facilities therefor. The total indebtedness of the several subsidized Pacific railroads to the United States on June 30, 1884, was as follows: Union Pacific (including Kansas Pacific), principal, \$33,539,512; accrued interest, \$33,099,554; total, \$66,639,066; Central Pacific (including Western Pacific), principal, \$27,855,680; accrued interest, \$26,792,145; total, \$54,647,825; Sioux City & Pacific, principal, \$1,625,320; accrued interest, \$1,661,996; total, \$3,287,316; Central Branch Union Pacific, principal, \$1,600,000; accrued interest, \$1,645,808; total, \$3,245,808; grand total, \$127,833,015. The companies are credited with transportation services performed and money paid into the Treasury as follows: Union Pacific, \$16,495,975; Central Pacific, \$8,090,779; Sioux City & Pacific, \$169,328; total, \$24,686,922. Balance in favor of the United States, but not due until maturity of principal—1895—\$102,934,794. The sinking funds of the Union and Central Pacific companies, held by the Treasurer of the United States, under the act of May 7, 1878, amounted to \$6,084,099, on June 30. Union Pacific having to its credit, \$3,435,576, and the Central Pacific \$2,648,523.

"The financial condition of the Union and Central Pacific companies on June 30 was: Union Pacific liabilities, including capital stocks, \$226,095,649; assets, \$245,011,363; surplus, \$18,915,713. Central Pacific—liabilities, \$180,312,355; assets, \$177,987,079; deficit, \$2,325,275. To the assets should be added unsold lands at water fronts at San Francisco, Sacramento and Oakland, whose value is placed at \$33,000,000. The Commissioner recommends the immediate investment of the \$2,000,000 belonging to the sinking funds of the two companies remaining uninvested, and urges upon Congress the importance of providing for the first payment of the bonded indebtedness of the several companies."

**Pennsylvania.**—The question of the November dividend will not be settled until Nov. 3, as a number of the officers and directors are now absent from Philadelphia, making the yearly inspection of the road.

The company's statement for September shows, as compared with September, 1883, on all lines east of Pittsburgh and Erie:

A decrease in gross earnings of .....	\$176,127
A decrease in expenses of .....	141,157
A decrease in net earnings of .....	\$34,970

The same lines for the nine months ending Sept. 30, as compared with the same period in 1883, show:

A decrease in gross earnings of.....\$1,494,808

A decrease in expenses of.....960,521

A decrease in net earnings of.....\$534,287

Carrying out these differences, we have the following statement:

	September.	September.	September.	September.
	1884.	1883.	1884.	1883.
Earnings.....	\$1,458,872	\$4,634,969	\$176,127	3.8
Expenses.....	2,571,478	2,712,635	141,157	5.2
Net earnings.....	\$1,887,394	\$1,922,364	\$34,970	1.8
Per cent. of exps. ....	57.7	58.5	0.8	...

All lines west of Pittsburgh and Erie for the nine months of 1884 show a deficiency in meeting all liabilities of \$649,523, being a decrease of \$1,543,881, as compared with the corresponding period of last year.

**Philadelphia & Reading.**—The Receivers' monthly statement gives the following figures for the earnings of the railroad for September and the ten months of the fiscal year from Dec. 1 to Sept. 30:

	September.	September.	September.	September.
	1884.	1883.	1884.	1883.
Earnings.....	\$2,876,451	\$3,333,217	\$25,459,502	\$22,611,578
Expenses.....	1,551,624	1,584,535	14,808,369	12,038,538

Net earnings.....\$1,324,827

Per cent. of exps. ....53.9

The month shows a decrease of \$456,763, or 13.7 per cent., in gross and of \$423,855, or 24.2 per cent., in net earnings; for the ten months there was an increase of \$2,847,984, or 12.6 per cent. in gross and of \$78,153, or 0.7 per cent., in net earnings. The operations of the leased New Jersey Central road are included for the full term this year, but for four months only (from June 1) last year.

The operations of the Philadelphia & Reading Coal & Iron Co. for the same periods were as follows:

	September.	September.	September.	September.
	1884.	1883.	1884.	1883.
Earnings.....	\$1,574,607	\$1,861,194	\$13,121,405	\$13,408,632
Expenses.....	1,597,282	1,766,722	13,334,238	13,030,417

Net or deficit.....D. \$22,675 N. \$94,472

P. c. of expenses. ....101.4

For the ten months there was a decrease of \$287,277, or 2.2 per cent., in gross earnings, and an increase of \$303,921, or 2.3 per cent., in expenses, making a total loss of \$591,098, and converting the small net earnings of last year into a deficit this year.

The net result for both companies was as follows:

	September.	September.	September.	September.
	1884.	1883.	1884.	1883.
Net earnings.....	\$1,324,827	\$1,748,682	\$10,651,193	\$10,573,040
Railroad Co. ....	\$22,675	\$94,472	\$212,833	\$78,265
Coal & Iron Co. ....				
Total .....	\$1,302,152	\$1,843,154	\$10,438,360	\$10,651,305

\* Deficit.

The net loss for the month was \$541,002, or 29.4 per cent.; for the ten months, \$512,945, or 4.7 per cent., notwithstanding the additional half year of the New Jersey Central this year. The expenses above do not include interest or rentals, the net earnings being the sum from which all charges are to be paid.

Holders of about \$350,000 adjustment scrip, on which default in interest was made July 1 last, have begun proceedings to compel the trustees to sell the income bonds deposited as security for the scrip, in accordance with the agreement under which the scrip was issued.

**St. Louis, Keokuk & Northwestern.**—In the matter of the cross-bill filed by Josiah Fogg in the foreclosure suit, the United States Circuit Court overrules the demurrers filed, holding that certain claims presented by the cross-bill as against the old company are liens upon the property prior to the mortgages made by the present company, which took the road subject to these liens.

**Sharpville.**—The controlling interest in this road, owned by the Pierces, of Sharpville, Pa., has been sold by them to the Baltimore & Ohio Co., and that company has taken possession, putting in its own officers. The line is a coal road, extending from Sharpville, Pa., to Wilmington Junction, 17 miles, and connecting with a number of iron furnaces and mills. The intention is doubtless to connect it with the Pittsburgh & Western road. There was a contest over the control of this road last January between the Pierces and Wm. L. Scott, of Erie, in which the former were successful.

**Shenandoah Valley.**—The statement for September and the nine months ending Sept. 30 is as follows:

	September.	September.	September.	September.
	1884.	1883.	1884.	1883.
Earnings.....	\$81,474	\$9,726	\$557,521	\$619,090
Expenses.....	48,508	58,046	459,450	488,078
Net earnings.....	\$32,966	\$3,680	\$98,071	\$131,012
Per cent. of exps. ....	50.5	63.3	73.8	73.8

For the nine months the gross earnings decreased \$61,569, or 9.9 per cent., and the expenses \$33,623, or 5.9 per cent., leaving a decrease of \$93,941, or 25.1 per cent., in net earnings.

**Southern Kansas.**—On this division of the Atchison, Topeka & Santa Fe lines tracklaying has just been completed to Attica, Kan., 12 miles west of Harper, which has been the terminus for several years, and 315 miles from Kansas City.

**Stony Clove & Catskill Mountain.**—The winter time-table of this road shows two daily trains running each way between Poughkeepsie, N. Y., and Hunter. Unlike the other Catskill Mountain roads this line is kept open and trains run all through the winter.

**Texas & Pacific.**—It is stated that holders of \$12,000,000 have joined in the appointment of the Philadelphia Committee. That committee has been given power to investigate the company's affairs and suggest a plan for the settlement of its differences with the bondholders.

**Texas & St. Louis.**—Receiver Woodward reports that the total amount of Receiver's certificates authorized by the Court in payment for labor, supplies and equipment, has been \$644,500. He has issued in all to Oct. 20 certificates amounting to \$510,972, leaving \$133,528 unissued.

The order directing the payment of claims for supplies, etc., provided any part of the work was done or materials furnished after Sept. 1, 1883, has been modified and restricted by adding thereto the words: "On subsisting contracts necessary for the continued operation of the road by the said Receiver; otherwise the demand will be limited to what accrued subsequent to said Sept. 1."

**Toledo, Cincinnati & St. Louis.**—The adjourned meeting of bondholders of the Southeastern Division which



(2) by the seriously defective harvest of the autumn of 1883, (3) by general commercial and industrial depression, and (4) by severe competition in through rates, which prevailed during nearly four months of the six. Every effort has been made to meet this disastrous state of affairs, and the working expenses have been reduced as far as was consistent with efficiency and true economy. The results are as good as could be expected or obtained under such a combination of adverse influences. It is satisfactory, however, to report that the harvest of 1884 has been abundant and well gathered; and as there has not yet been any important movement, more of it may be expected to come forward by rail and less by water. It is therefore reasonable to hope that in the later months of this year, and the spring of next year, the conditions will be reversed; and that there will be more traffic to carry and less competition, or, in other words, better rates for carrying it."